7.3.6. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Conducted power was measured based on the use of RMS averaging over a time interval, therefore the required attenuation is 30 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

No non-compliance noted:

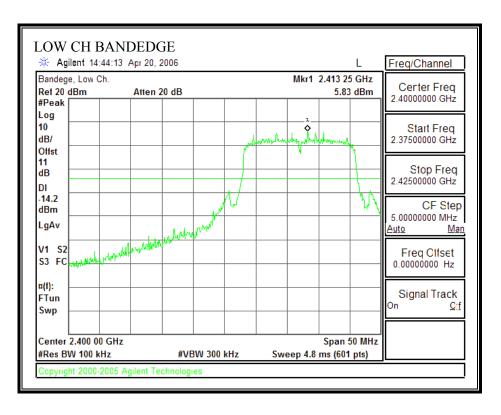
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802.11g Mode Legacy CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0.

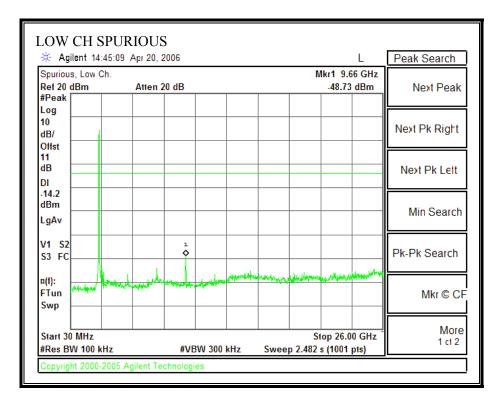
802.11n Mode 20 MHz CDD MCS 0:

SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

LOW CH BANDEDGE, 2412 MHz



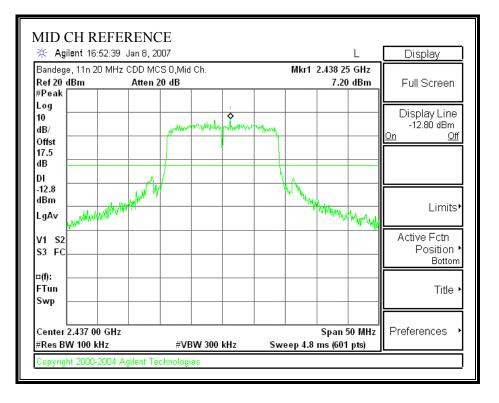
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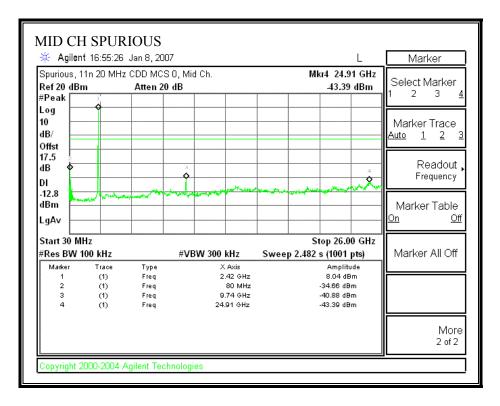
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

MID CH BANDEGE, 2437 MHz



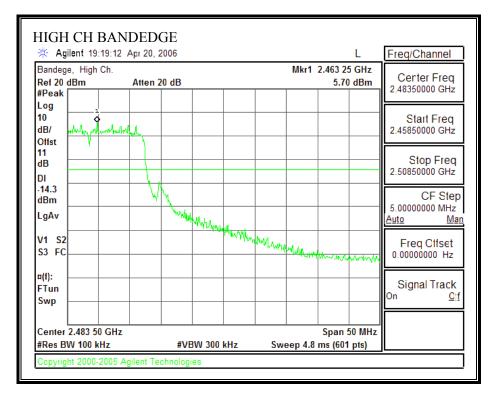
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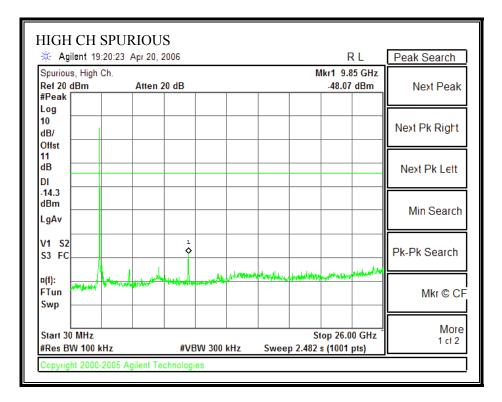
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0

HI CH BANDEDGE, 2462 MHz



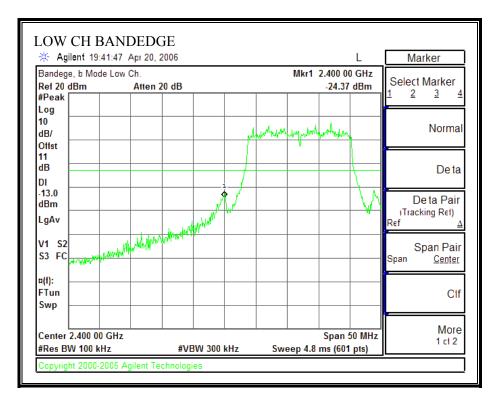
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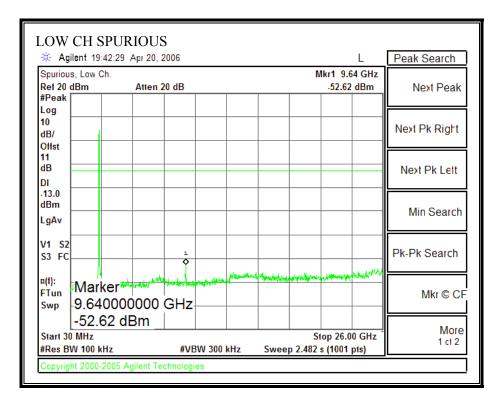
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SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)

LOW CH BANDEDGE, 2412 MHz



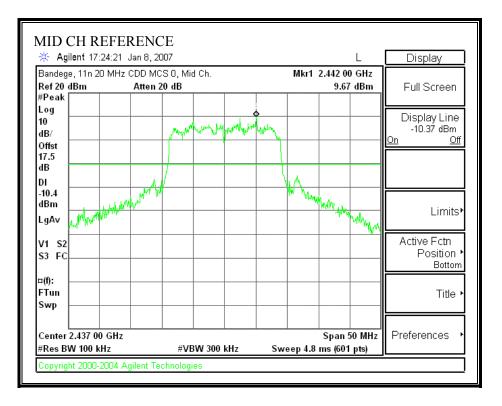
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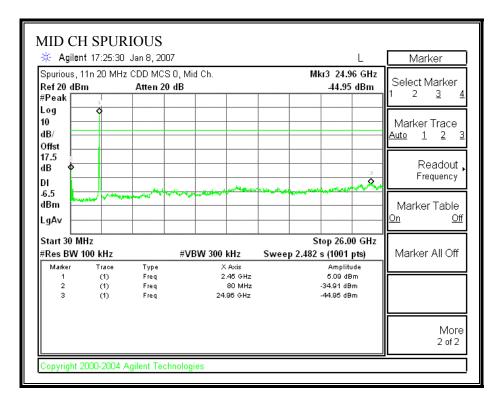
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)

MID CH BANDEGE, 2437 MHz



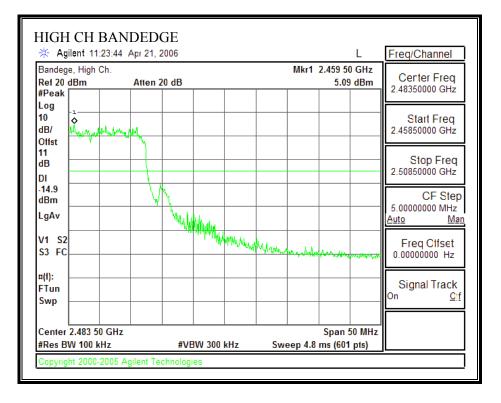
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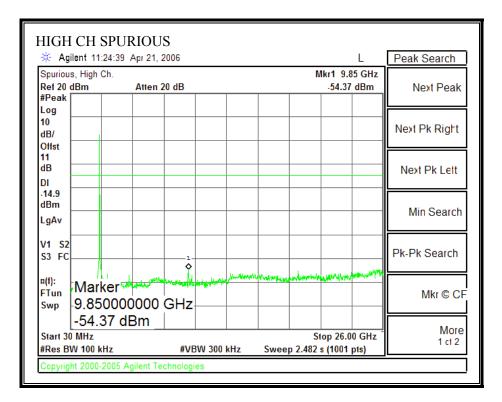
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)

HIGH CH BANDEDGE, 2462 MHz



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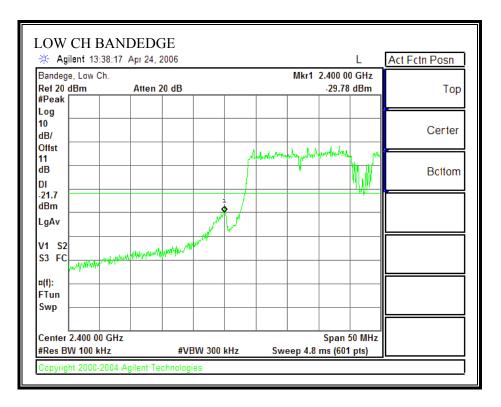


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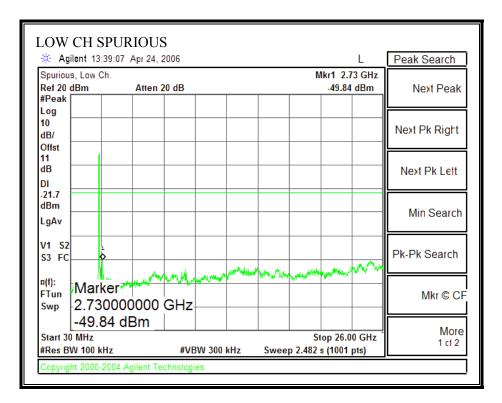
802.11n Mode 40 MHz CDD MCS 32

SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

LOW CH BANDEDGE, 2422 MHz



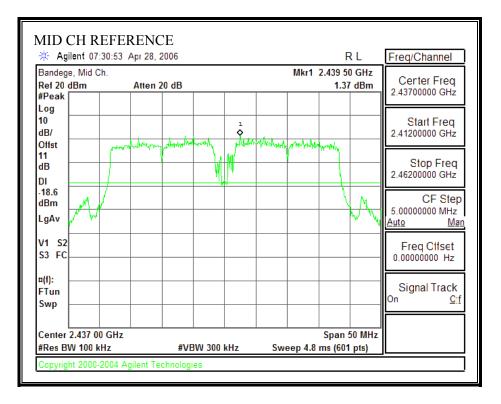
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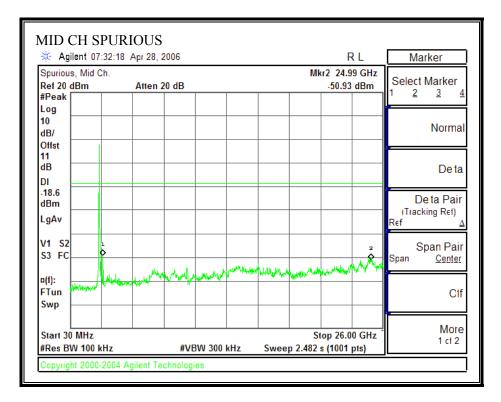
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

MID CH BANDEGE, 2437 MHz



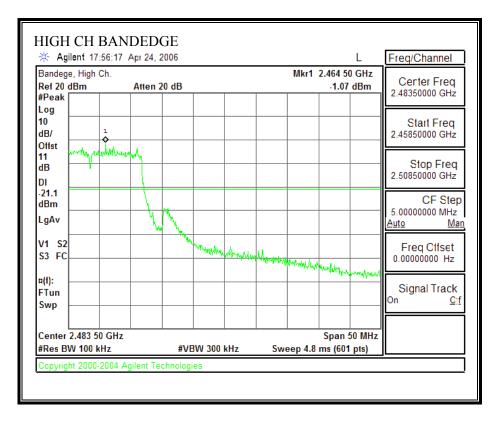
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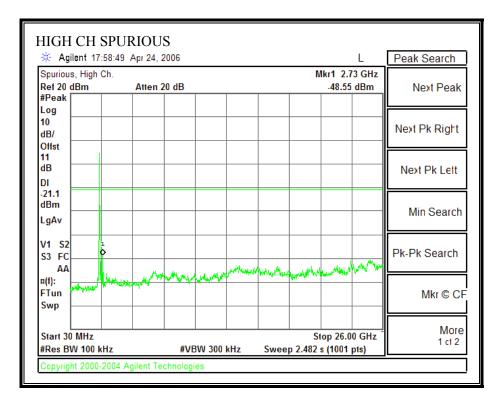
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

HIGH CH BANDEDGE, 2452 MHz



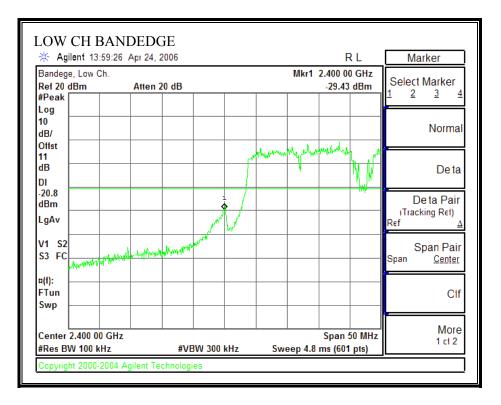
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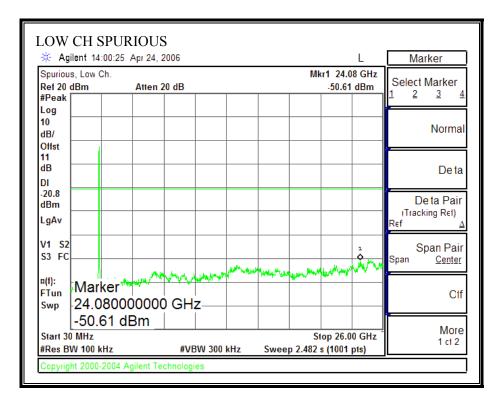
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SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

LOW CH BANDEDGE, 2422 MHz



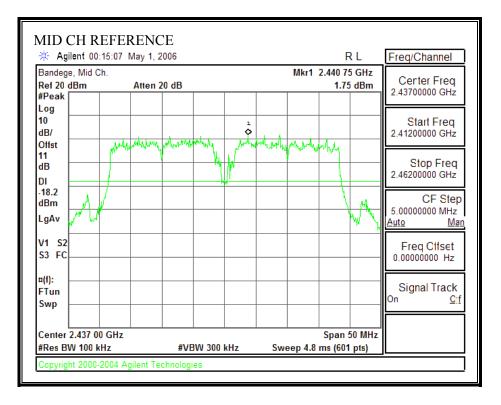
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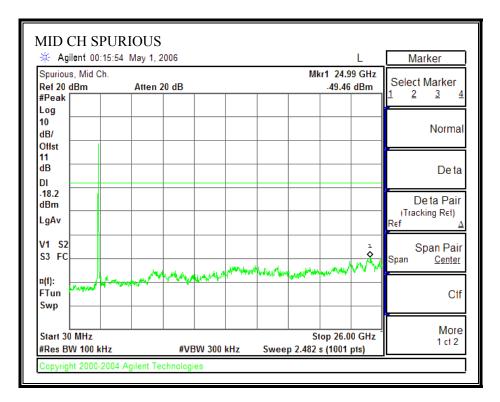
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

MID CH BANDEGE, 2437 MHz



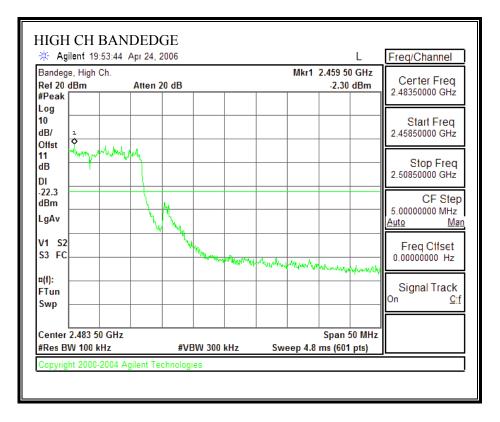
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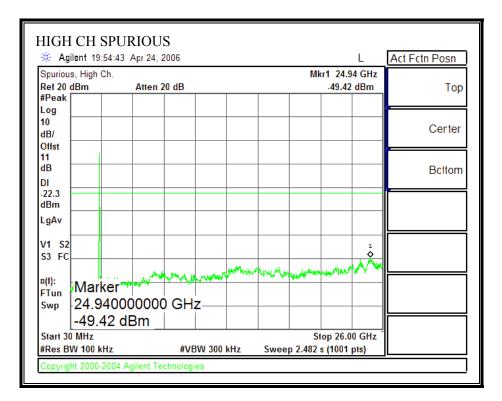
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

HIGH CH BANDEDGE, 2452 MHz



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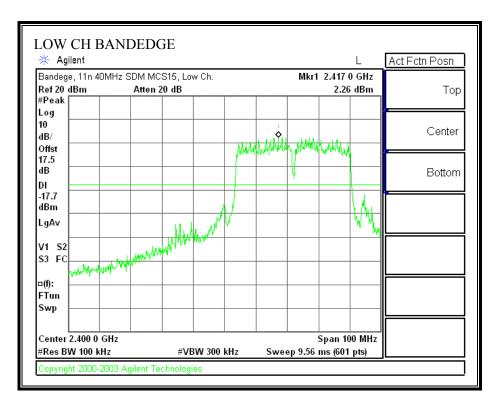


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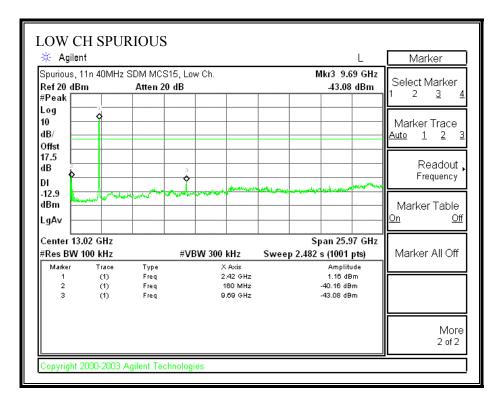
802.11n Mode 40 MHz SDM MCS 15:

SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

LOW CH BANDEDGE, 2422 MHz



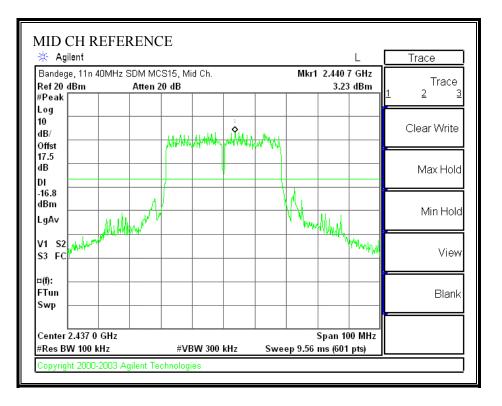
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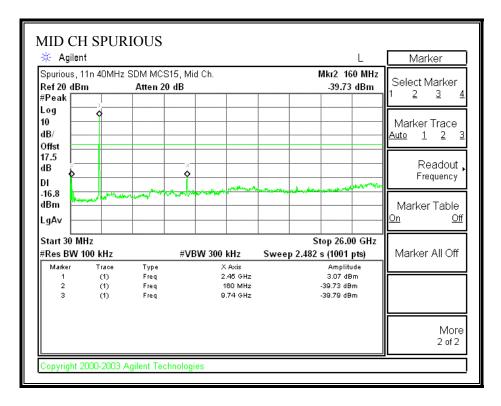
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

MID CH BANDEGE, 2437 MHz



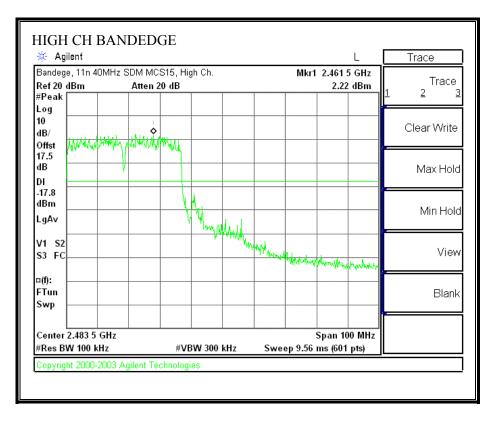
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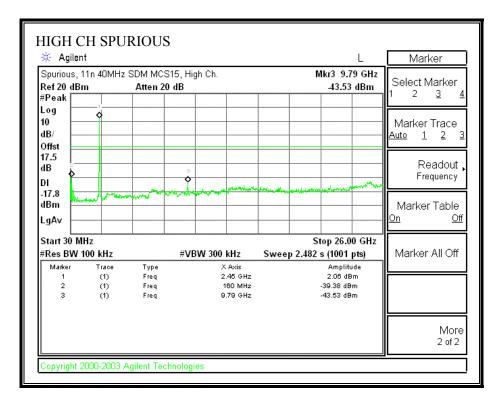
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

HIGH CH BANDEDGE, 2452 MHz



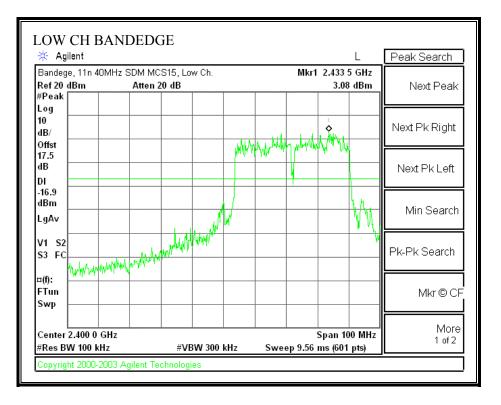
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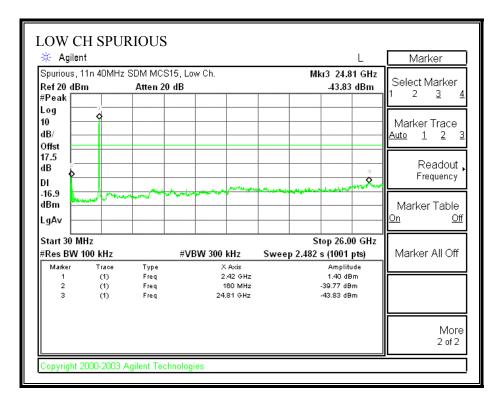
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SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

LOW CH BANDEDGE, 2422 MHz



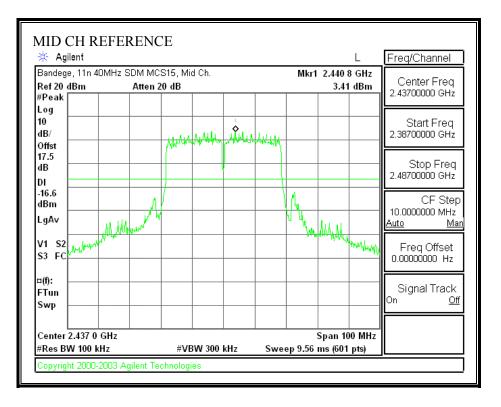
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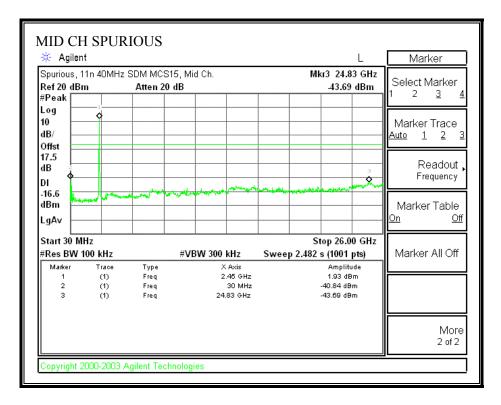
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

MID CH BANDEGE, 2437 MHz



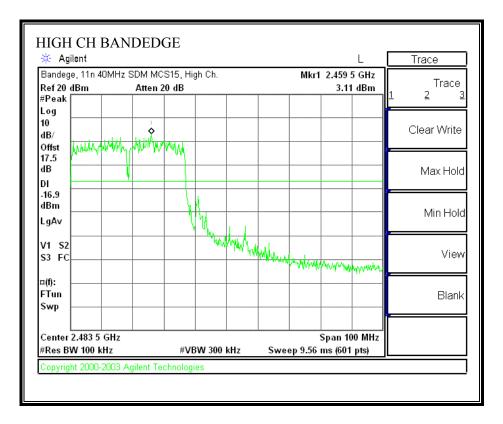
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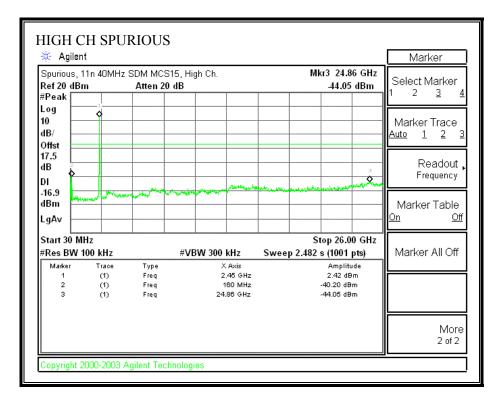
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

HIGH CH BANDEDGE, 2452 MHz



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7.4. CHANNEL TESTS FOR THE 5725 TO 5850 MHz BAND

7.4.1. 6 dB BANDWIDTH

<u>LIMIT</u>

§15.247 (a) (2) For direct sequence systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 300 kHz. The sweep time is coupled.

RESULTS

No non-compliance noted:

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6 dB BANDWIDTH

802.11a Mode CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0

802.11n Mode 20 MHz CDD MCS0

Channel	Frequency	6 dB Bandwidth	6 dB Bandwidth Minimum Limit	
	(MHz)	(kHz)	(kHz)	(kHz)
Low	5745	16250.00	500	15750
Middle	5785	16000.00	500	15500
High	5825	15750.00	500	15250

20 MHz Tx BANDWIDTH - CHAIN 0

20 MHz Tx BANDWIDTH - CHAIN 1

Channel	Frequency	6 dB Bandwidth Minimum Limit		Margin
	(MHz)	(kHz)	(kHz)	(kHz)
Low	5745	16500	500	16000
Middle	5785	16750	500	16250
High	5825	16580	500	16080

802.11n Mode 40 MHz CDD MCS32

40 MHz Tz BANDWIDTH - CHAIN 0

Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
High	5755	35500	500	35000
High	5795	35250	500	34750

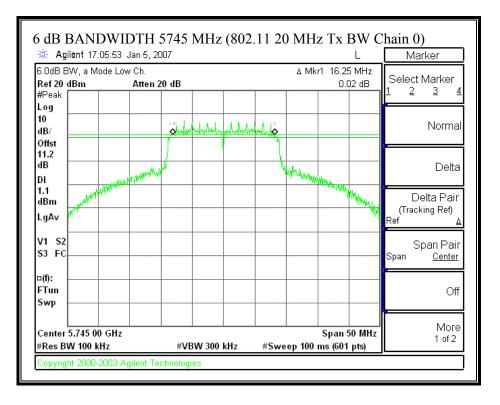
40 MHz Tx BANDWIDTH - CHAIN 1

Channel	Frequency	6 dB Bandwidth	Minimum Limit	Margin
	(MHz)	(kHz)	(kHz)	(kHz)
High	5755	35080	500	34580
High	5795	35750	500	35250

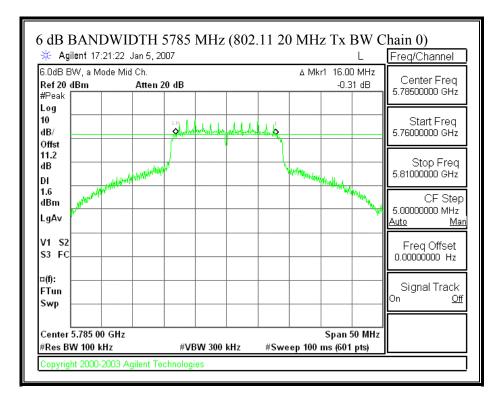
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802.11n Mode 20 MHz CDD MCS0

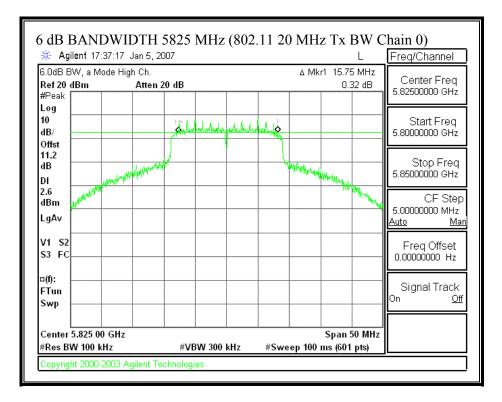
6 dB BANDWIDTH (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)



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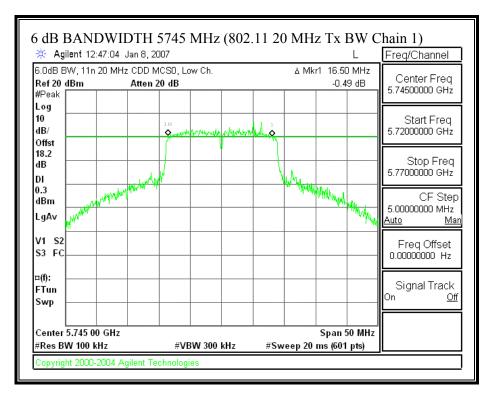


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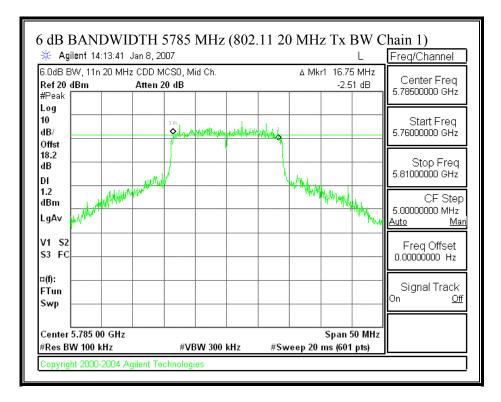


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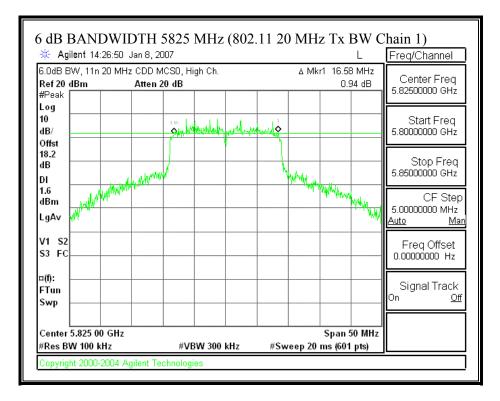
6 dB BANDWIDTH (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)



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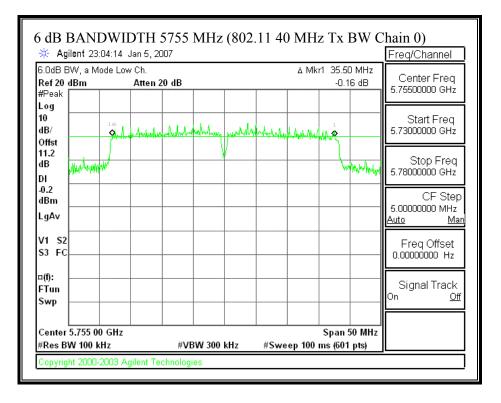
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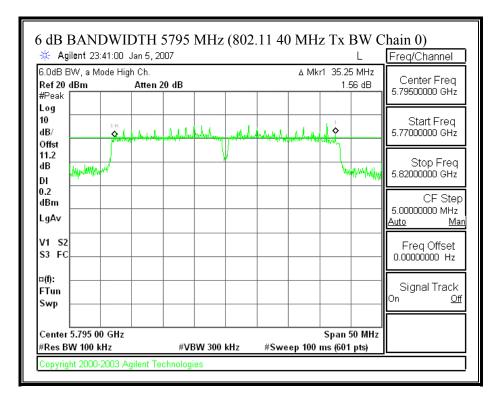
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802.11n Mode 20 MHz CDD MCS0

6 dB BANDWIDTH (802.11 - 40 MHz TX BANDWIDTH – CHAIN 0)

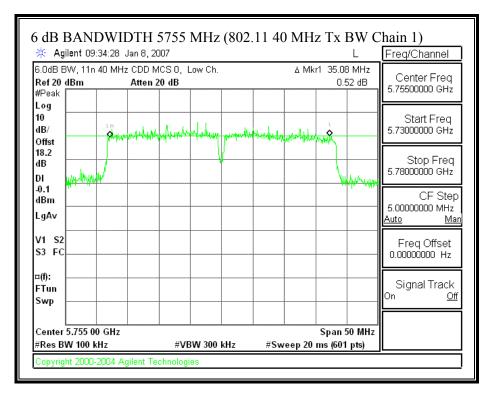


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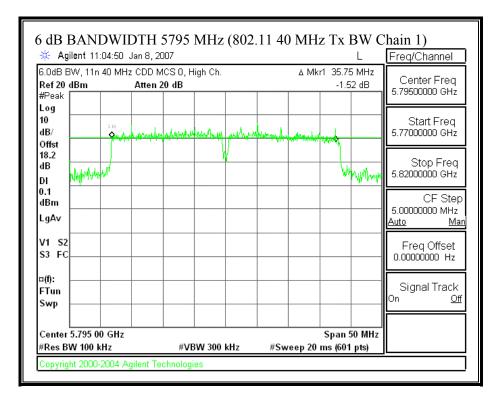


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6 dB BANDWIDTH (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)



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7.4.2. 99% BANDWIDTH

<u>LIMIT</u>

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99 % bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

RESULTS

No non-compliance noted:

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99% BANDWIDTH

802.11a Mode CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0

802.11n Mode 20 MHz CDD MCS0

20MHz Tx Bandwidth

Channel	Frequency	99% Bandwidth Chain 0	99% Bandwidth Chain 1
	(MHz)	(MHz)	(MHz)
Low	5745	17.6975	17.8519
Middle	5785	17.5387	17.7025
High	5825	17.9750	17.9946

802.11n Mode 40 MHz CDD MCS 32

40MHz Tx Bandwidth

Channel	Frequency	99% Bandwidth Chain 0	99% Bandwidth Chain 1
	(MHz)	(MHz)	(MHz)
Low	5755	36.4470	36.2975
High	5795	37.9466	36.5798

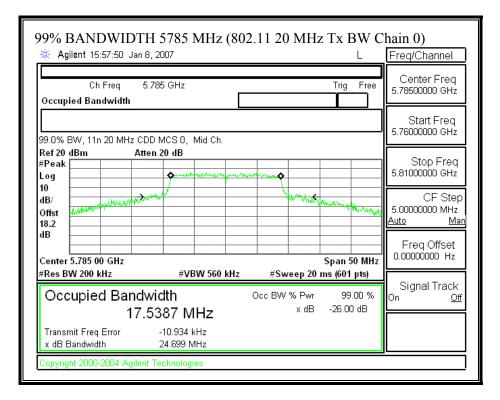
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802.11n Mode 20 MHz CDD MCS0

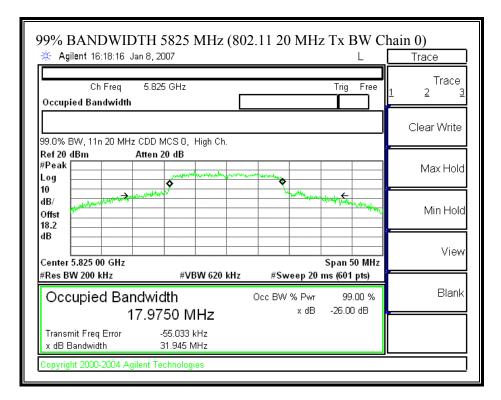
99% BANDWIDTH (802.11 - 20 MHz Tx BANDWIDTH - CHAIN 0)

🔆 Agilent 15:43:10 Jan 8,1	2007		L	Freq/Channel
Ch Freq 5.7 Occupied Bandwidth	45 GHz		Trig Free	Center Freq 5.74500000 GHz
	MCS 0 Low Ch			Start Freq 5.72000000 GHz
Ref 20 dBm Atten #Peak	20 dB	The second secon		Stop Freq 5.77000000 GHz
dB/ Offst 18.2			where will be a starting of the	CF Step 5.0000000 MHz <u>Auto Ma</u>
dB Center 5.745 00 GHz #Res BW 200 kHz	#VBW 560 kHz	#Sweep 20	Span 50 MHz ns (601 pts)	Freq Offset 0.00000000 Hz
Occupied Bandwi 17.6	dth 958 MHz	Occ BW % Pwr x dB	99.00 %	Signal Track On <u>Of</u>
Transmit Freq Error x dB Bandwidth	-21.148 kHz 28.766 MHz			

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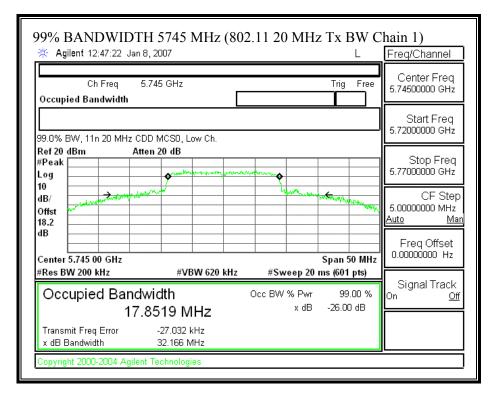


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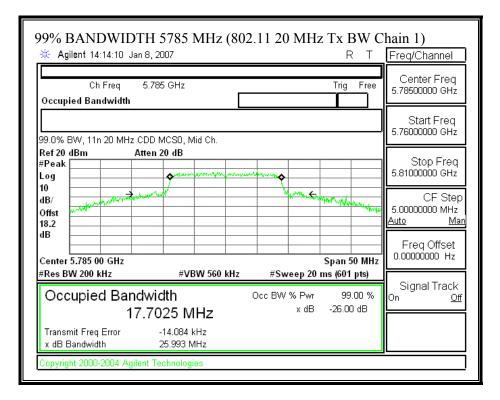


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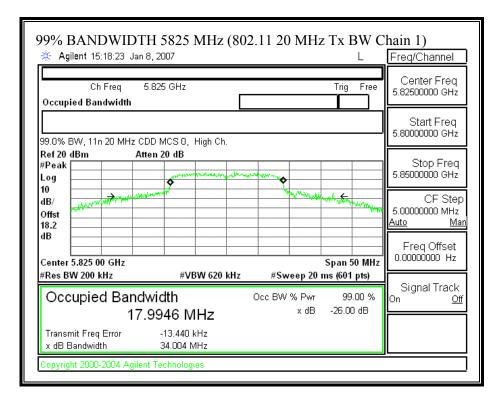
99% BANDWIDTH (802.11 - 20 MHz Tx BANDWIDTH - CHAIN 1)



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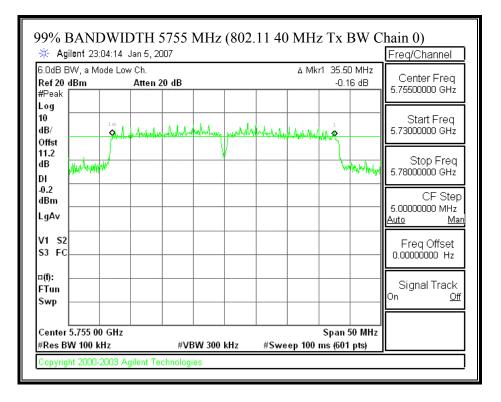
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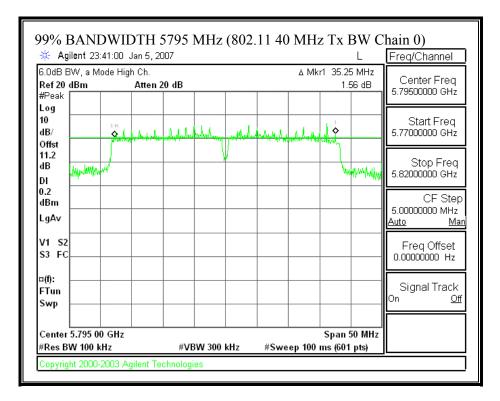
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802.11n Mode 40 MHz CDD MCS32

99% BANDWIDTH (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

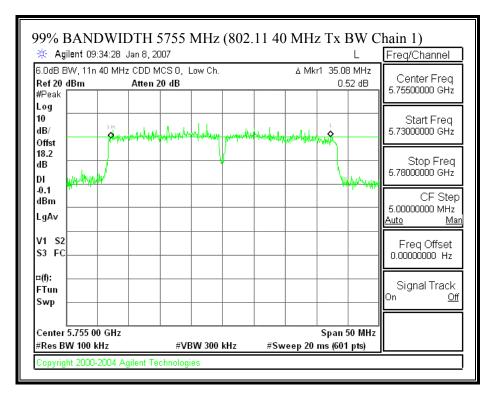


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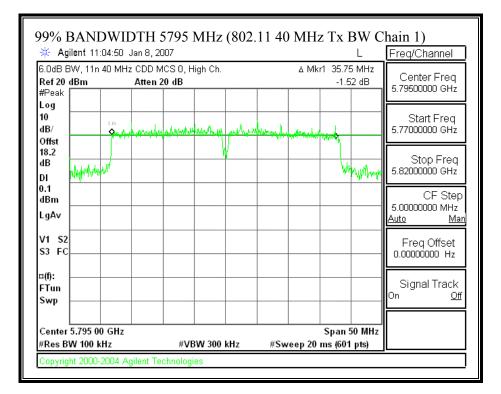


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99% BANDWIDTH (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)



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7.4.3. PEAK OUTPUT POWER

PEAK POWER LIMIT

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz , and 5725-5850 MHz bands: 1 watt.

§15.247 (b) (3) For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

§15.247 (b) (4) (i) Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer and the analyzer's internal channel power integration function is used to integrate the power over a bandwidth greater than or equal to the 99% bandwidth.

Following formula to calculate the array gain:

Array gain = $10*\log(10^{(main gain/10)} + 10^{(aux gain/10)})$

2.4GHz band: 5.948 dBi 5.8GHz band: 8.084 dBi

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<u>RESULTS,</u>

The maximum antenna gain is 8.084dBi for other than fixed, point-to-point operations, therefore the limit is 27.92dBm.

Total peak power calculation formula: $10 \log (10^{(Pchain0 / 10) + 10^{(Pchain1 / 10))})$

Note: Pchain 0 and Pchain1 are in dBm

No non-compliance noted:

802.11a Mode CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0

802.11n Mode 20 MHz CDD MCS0

CHAIN 0 & CHAIN 1

Channel	Frequency	Peak Power	Peak Power	Peak Power	Limit	Margin
		Chain 0	Chain 1	Total		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5745	23.94	23.82	26.89	27.9	-1.03
Middle	5785	24.58	24.46	27.53	27.9	-0.39
High	5825	24.89	24.69	27.80	27.9	-0.12

802.11n Mode 40 MHz CDD MCS32

Channel	Frequency	Peak Power	Peak Power	Peak Power	Limit	Margin
		Chain 0	Chain 1	Total		
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
CHAIN 0 & C	HAIN 1					
Low	5755	25.18	25.19	28.20	27.9	0.28
High	5795	25.53	25.56	28.56	27.9	0.64

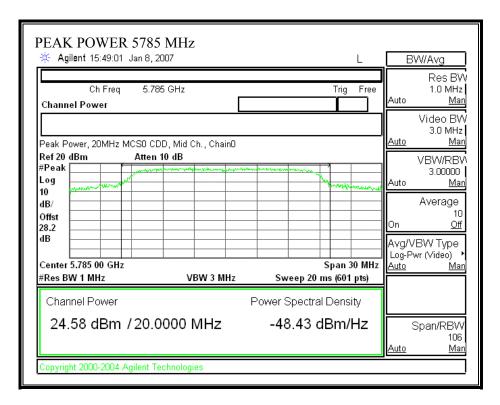
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802.11n Mode 20 MHz CDD MCS0

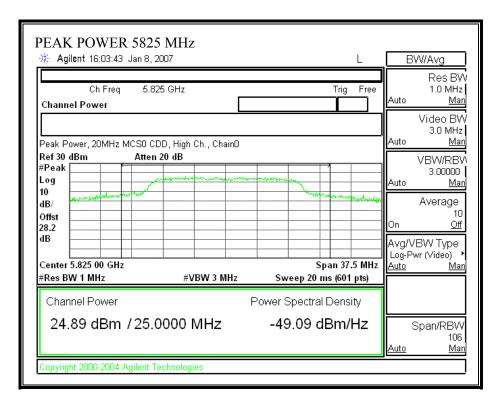
OUTPUT POWER (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

🔆 Agilent 16:13:27 Jan 8	2007	L	BW/Avg
Ch Freq 5. Channel Power	745 GHz	Trig Fre	Res B e 1.0 MH Auto <u>Ma</u>
			Video B ¹ 3.0 MH Auto <u>M</u> a
Ref 20 dBm Atte	n 10 dB		
dB/			Average
dB Center 5.745 00 GHz #Res BW 1 MHz	#VBW 3 MHz	Span 27 MI Sweep 20 ms (601 pts)	Avg/VBW Type Log-Pwr (Video) Iz <u>Auto M</u> a
Channel Power		Power Spectral Density	
23.94 dBm /18	.0000 MHz	-48.61 dBm/Hz	Span/RBV 10 <u>Auto M</u> a

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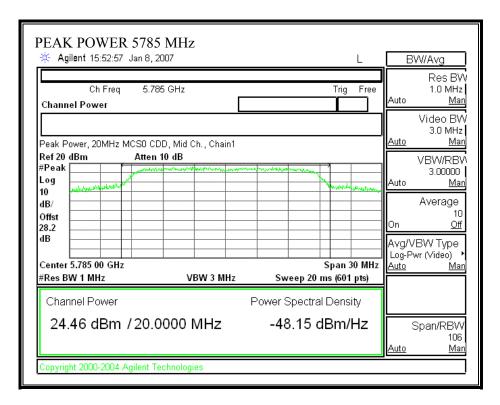


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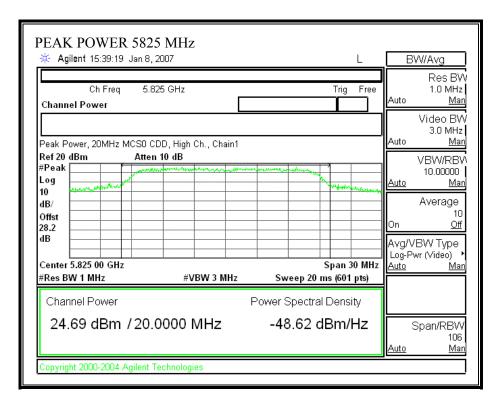
OUTPUT POWER (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)

🌾 Agilent 15:32:03 Jan 8, 2	2007		L	B٧	//Avg
Ch Freq 5.74 Channel Power	45 GHz	Trig		Auto	Res B\ 1.0 MH: <u>Ma</u>
Peak Power, 20MHz MCS0 CI	DD, Low Ch., Chain1			۱ <u>Auto</u>	Video B\ 3.0 MH: <u>Ma</u>
	10 dB		Manual Law	\ Auto	/BW/RB 3.00000 <u>Ma</u>
0				, On	Average 10 <u>Of</u>
Center 5.745 00 GHz		•	27 MHz		3W Type r (Video) <u>Ma</u>
Res BW 1 MHz	VBW 3 MHz	Sweep 20 ms (60	• ⁄		
Channel Power 23.82 dBm / 18.0		ower Spectral Den -47.93 dBm-	·		pan/RBV
		11.00 dBill		Auto	100 100 <u>Ma</u>

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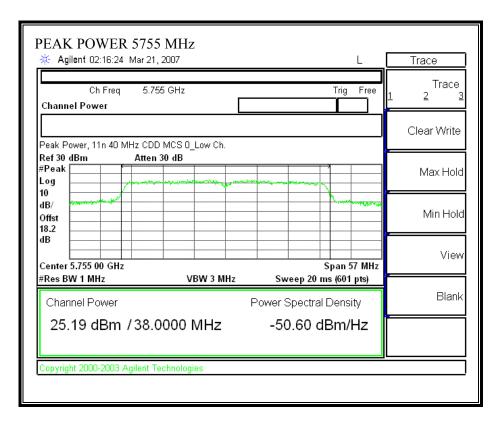
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802.11n Mode 40 MHz CDD MCS32

OUTPUT POWER (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

PEAK POWER 5755 MHz	Trace
Ch Freq 5.755 GHz Trig Free Channel Power	Trace
Peak Power, 11n 40 MHz CDD MCS 0_Low Ch.	Clear Write
Ref 30 dBm Atten 30 dB #Peak	Max Hold
10 dB/ 0ffst	Min Hold
dB Center 5.755 00 GHz Span 57 MHz	View
#Res BW 1 MHz VBW 3 MHz Sweep 20 ms (601 pts) Channel Power Power Spectral Density	Blank
25.18 dBm / 38.0000 MHz -50.62 dBm/Hz	
Copyright 2000-2003 Agilent Technologies	

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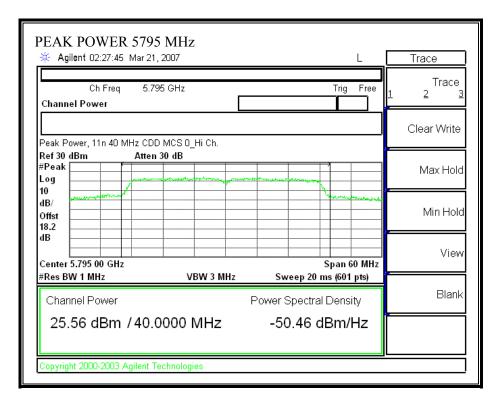


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OUTPUT POWER (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

Ch Freq 5.795 GHz Channel Power			Trig Free	Trace
Peak Power, 11n 40 MHz CDD MCS 0 Hi (`h			Clear Write
Ref 30 dBm Atten 30 dB Peak				Max Hold
00 ///////////////////////////////////				Min Hold
IB	3 MHz	Sweep 2	Span 60 MHz 0 ms (601 pts)	Viev
Channel Power 25.53 dBm / 40.0000 MH	Blank			
25.55 dBm 740.0000 MF	72	-50.49	dBm/Hz	

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7.4.4. MAXIMUM PERMISSIBLE EXPOSURE

LIMITS

§1.1310 The criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio-frequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of §2.1093 of this chapter.

Frequency range (MHz)	Electric field Magnetic field strength strength (V/m) (A/m)		Power density (mW/cm²)	Averaging time (minutes)				
(A) Limits for Occupational/Controlled Exposures								
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f²) 1.0 f/300 5	6 6 6 8				
(B) Limits for General Population/Uncontrolled Exposure								
0.3–1.34 1.34–30	614 824 <i>/</i> f	1.63 2.19/f	*(100) *(180/f²)	30 30				

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

TABLE 1-LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)-Continued

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm²)	Averaging time (minutes)	
30–300 300–1500 1500–100,000	27.5	0.073	0.2 f/1500 1.0	30 30 30	

f = frequency in MHz

* = Plane-wave equivalent power density NOTE 1 TO TABLE 1: Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occu-tion to the state of the here the exposure also apply in situations when an individual is transient through a location where occu-tion to the state of the here the exposure also apply in situations.

pational/controlled limits apply provided he or she is made aware of the potential for exposure. NOTE 2 TO TABLE 1: General population/uncontrolled exposures apply in situations in which the general public may be ex-posed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

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CALCULATIONS

Given

 $E = \sqrt{(30 * P * G)} / d$

and

 $S = E^{2} / 3770$

where

E = Field Strength in Volts/meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts/square centimeter

Combining equations and rearranging the terms to express the distance as a function of the remaining variables yields:

 $d = \sqrt{((30 * P * G) / (3770 * S))}$

Changing to units of Power to mW and Distance to cm, using:

P(mW) = P(W) / 1000 and d(cm) = 100 * d(m)

yields

 $d = 100 * \sqrt{((30 * (P / 1000) * G) / (3770 * S))}$ $d = 0.282 * \sqrt{(P * G / S)}$

where

d = distance in cm P = Power in mW G = Numeric antenna gain S = Power Density in mW/cm^2

Substituting the logarithmic form of power and gain using:

 $P(mW) = 10^{(P(dBm) / 10)}$ and $G(numeric) = 10^{(G(dBi) / 10)}$

yields

 $d = 0.282 * 10^{(P+G)} / 20) / \sqrt{S}$

where

d = MPE distance in cm P = Power in dBm G = Antenna Gain in dBi S = Power Density Limit in mW/cm^2

Rearranging terms to calculate the power density at a specific distance yields

 $S = 0.0795 * 10^{(P+G)} / 10) / (d^2)$

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<u>LIMITS</u>

From 1.1310 Table 1 (B), S = 1.0 mW/cm² in the 5.8 GHz band.

RESULTS

No non-compliance noted

<u>RESULTS</u>

No non-compliance noted

Mode	MPE	Total	Antenna	Power	
	Distance	Power	Gain	Density	
	(cm)	(dBm)	(dBi)	(mW/cm^2)	
802.11n 20MHz CDD	20.0	27.80	8.04	0.76	
802.11n 40MHz CDD	20.0	28.39	8.04	0.87	

NOTE: For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.

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7.4.5. PEAK POWER SPECTRAL DENSITY

LIMIT

§15.247 (d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

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RESULTS

No non-compliance noted:

802.11a Mode CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0

802.11n Mode20 MHz CDD MCS0

11n 20 MHz MCS 0

Channel	Frequency		PPSD	PPSD Total	Limit	Margin
		Chain 0	Chain 1			
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5745	-7.56	-5.27	-3.26	8	-11.26
Middle	5785	-7.60	-6.58	-4.05	8	-12.05
High	5825	-7.09	-6.56	-3.81	8	-11.81

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802.11n 40 MHz CDD MCS32

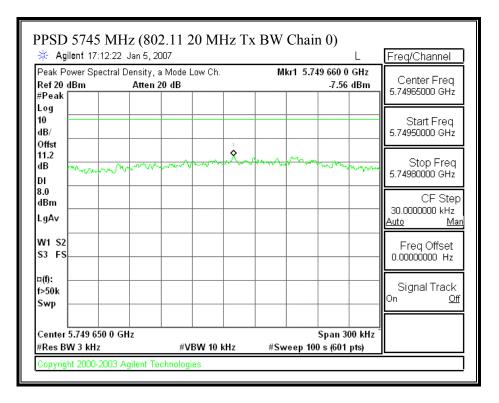
11n 40 MHz MCS 0

Channel	Frequency	PPSD	PPSD	PPSD Total	Limit	Margin
		Chain 0	Chain 1			
	(MHz)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)
Low	5755	-7.40	-8.28	-4.81	8	-12.81
High	5795	-10.09	-8.10	-5.97	8	-13.97

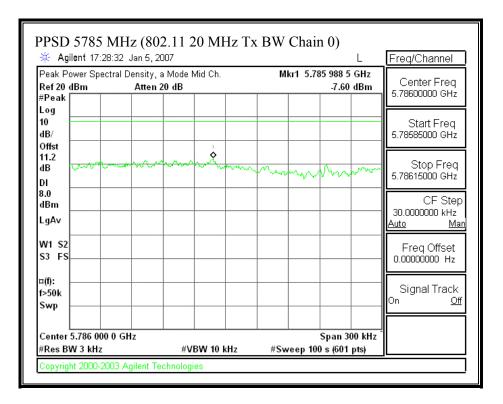
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802.11n Mode20 MHz CDD MCS0

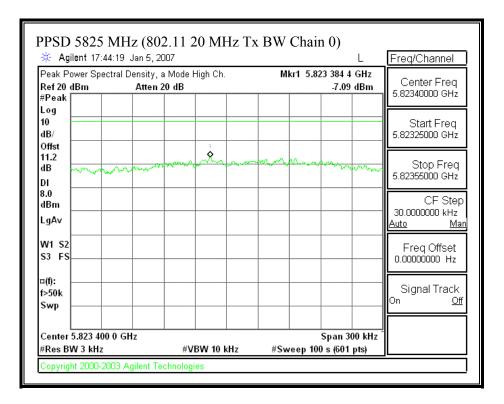
PEAK POWER SPECTRAL DENSITY (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)



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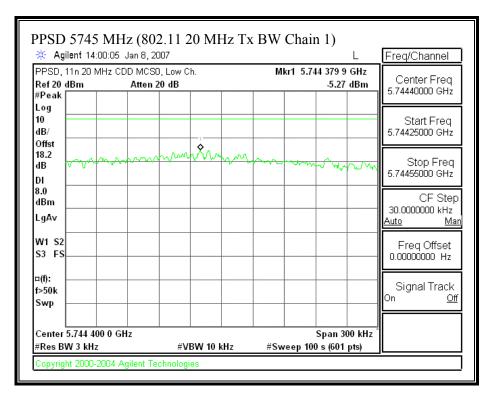


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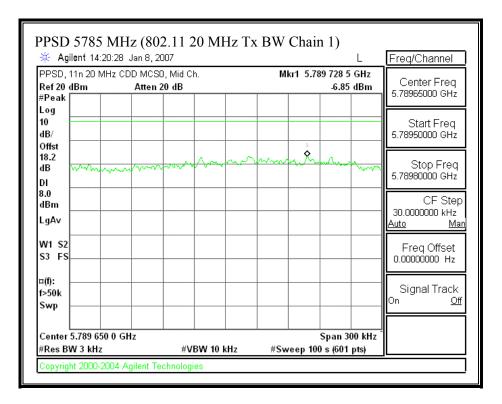


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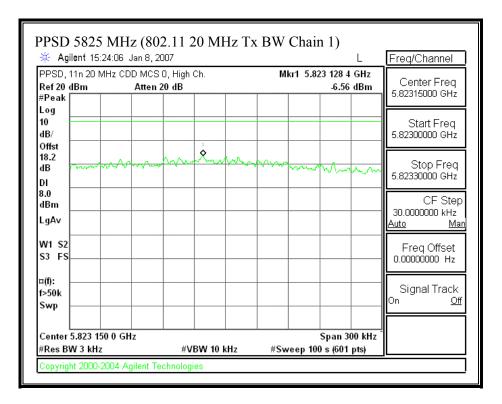
PEAK POWER SPECTRAL DENSITY (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)



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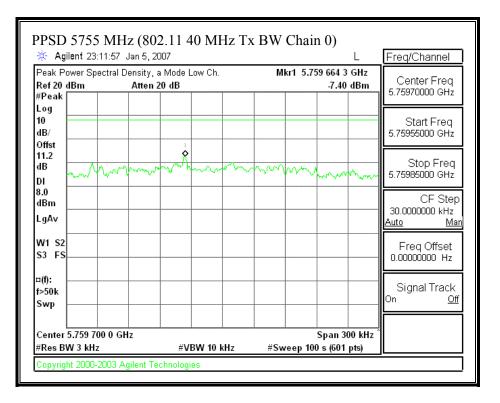
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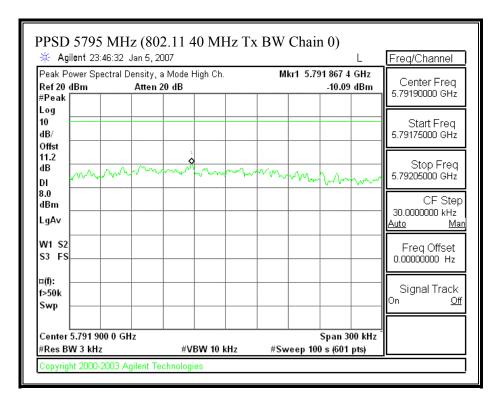
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802.11n Mode40 MHz CDD MCS32

PEAK POWER SPECTRAL DENSITY (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

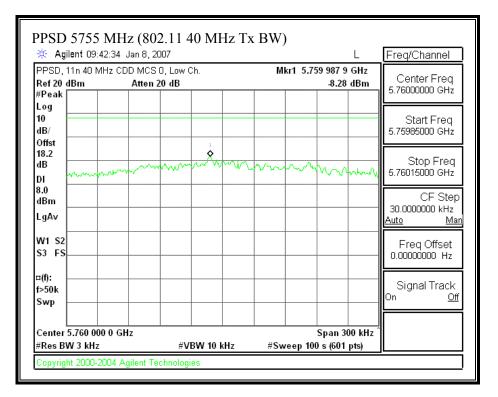


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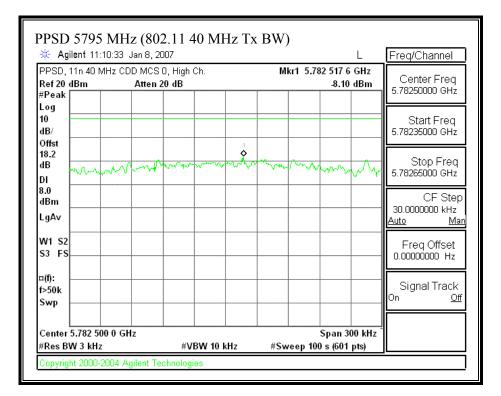


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PEAK POWER SPECTRAL DENSITY (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)



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7.4.6. CONDUCTED SPURIOUS EMISSIONS

<u>LIMITS</u>

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Conducted power was measured based on the use of RMS averaging over a time interval, therefore the required attenuation is 30 dB.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

No non-compliance noted:

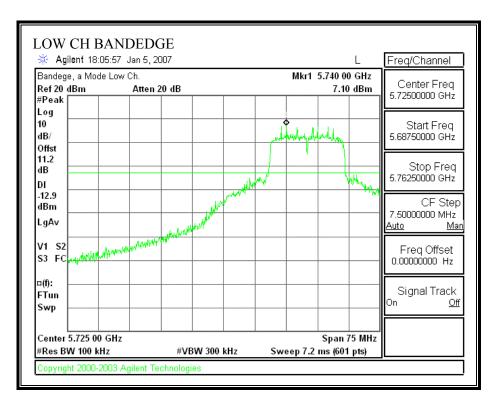
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802.11a Mode CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0

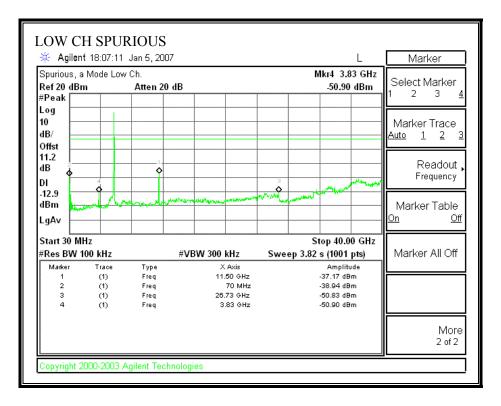
802.11n Mode 20 MHz CDD MCS0

SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

LOW CH BANDEDGE, 5745 MHz



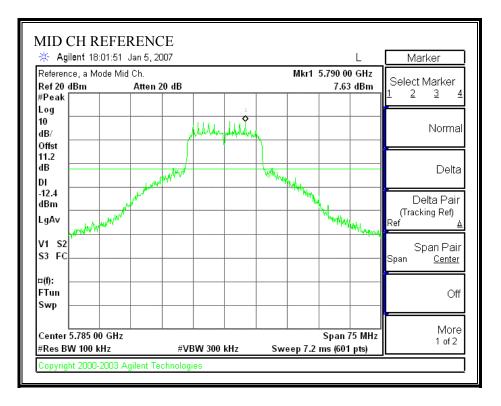
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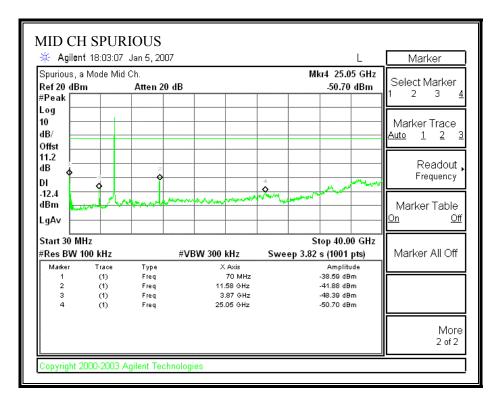
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

MID CH BANDEGE, 5785 MHz



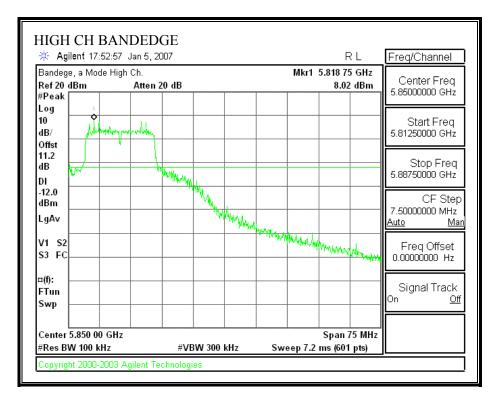
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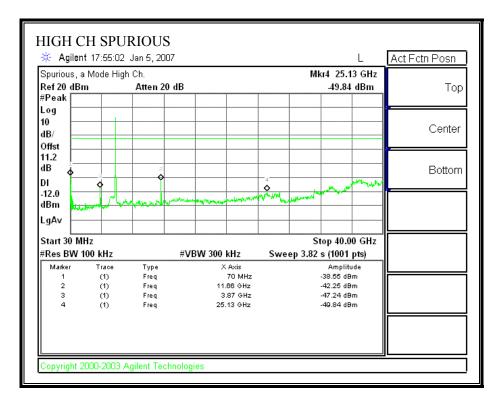
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 0)

HI CH BANDEDGE, 5825 MHz



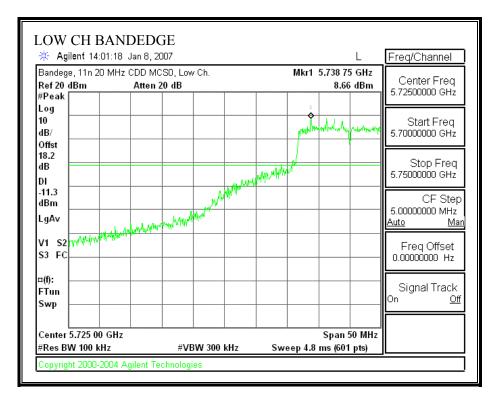
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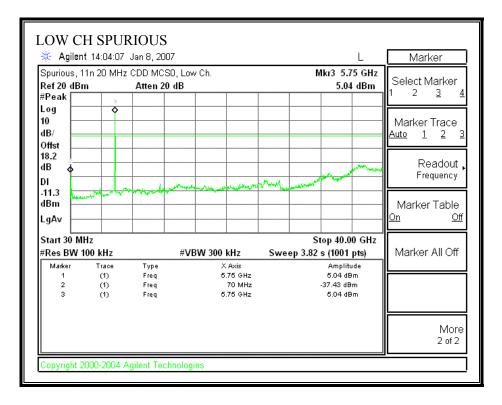
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SPURIOUS EMISSIONS, LOW CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)

LOW CH BANDEDGE, 5745 MHz



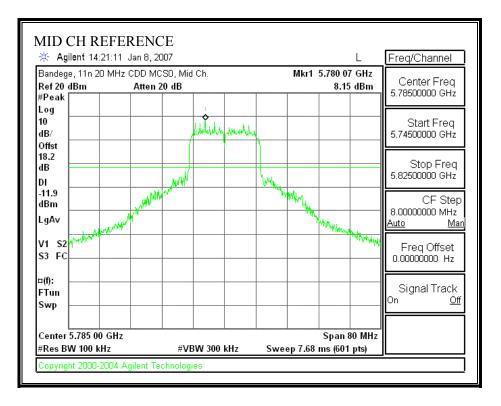
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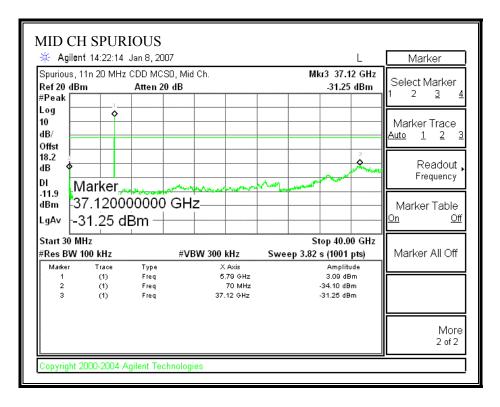
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SPURIOUS EMISSIONS, MIDDLE CHANNEL (802.11 - 20 MHz TX BANDWIDTH - CHAIN 1)

MID CH BANDEGE, 5785 MHz



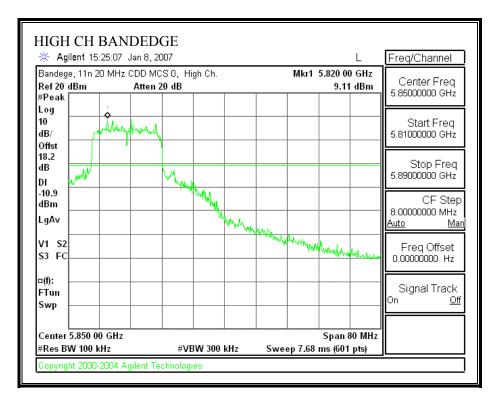
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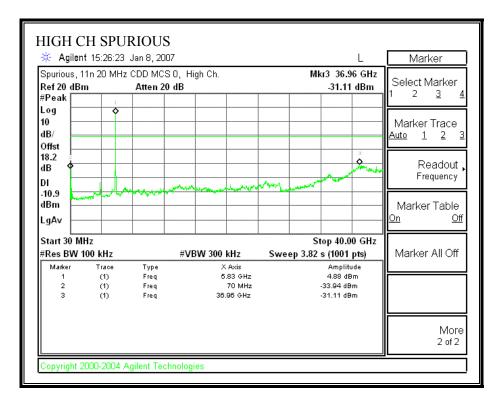
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 40 - MHz TX BANDWIDTH - CHAIN 1)

HI CH BANDEDGE, 5825 MHz



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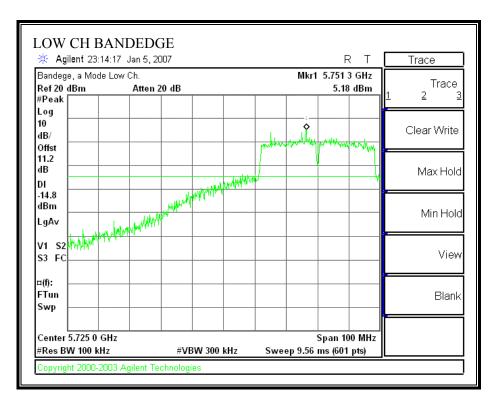


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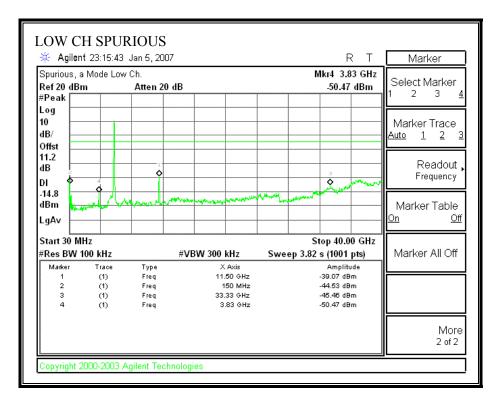
<u>11n 40 MHz CDD MCS32</u>

SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 0)

LOW CH BANDEDGE, 5755 MHz

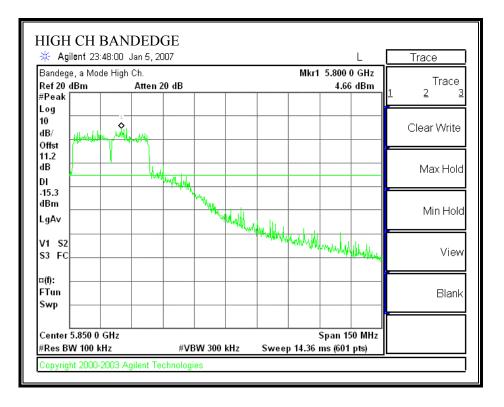


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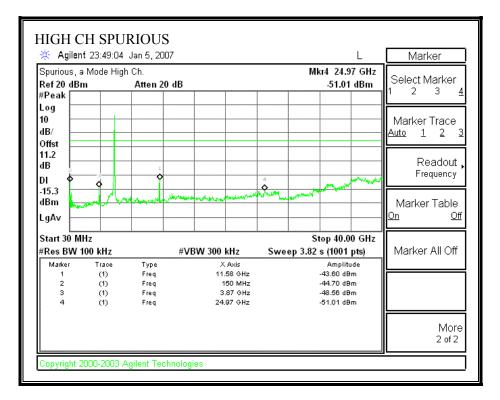


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HIGH CH BANDEDGE, 5795 MHz



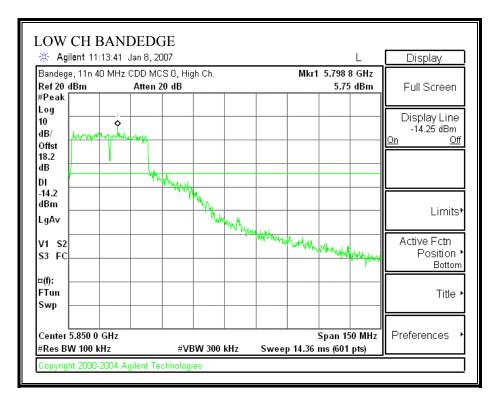
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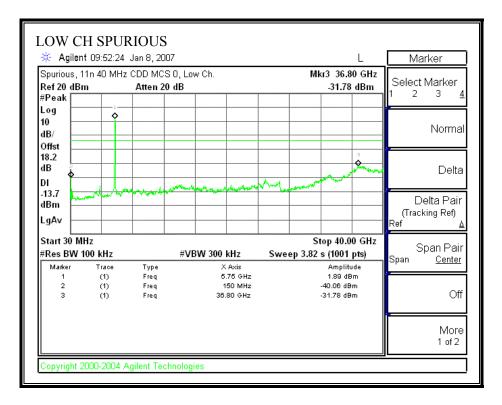
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SPURIOUS EMISSIONS, HIGH CHANNEL (802.11 - 40 MHz TX BANDWIDTH - CHAIN 1)

LOW CH BANDEDGE, 5755 MHz

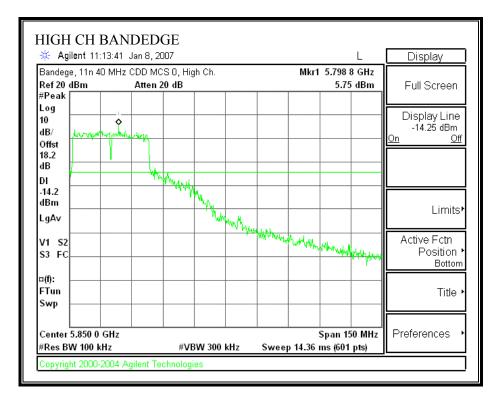


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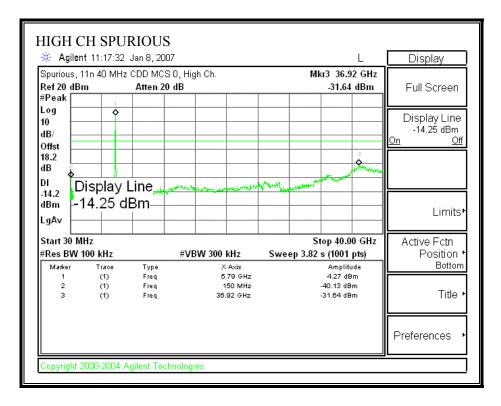


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HI CH BANDEDGE, 5795 MHz



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7.5. RADIATED EMISSIONS

7.5.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

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§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216 216 - 960	150 ** 200 **	3 3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

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TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

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LEGACY MODE

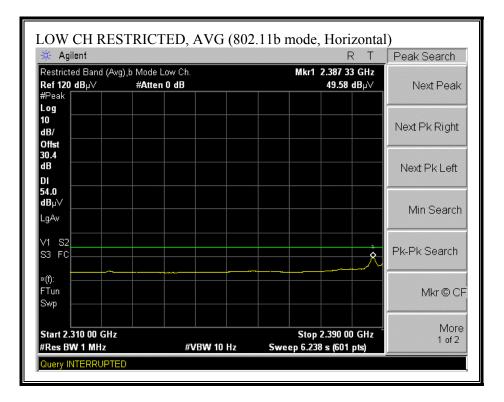
7.5.2. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

<u>11b Legacy Mode</u>

RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, 2412 MHz, HORIZONTAL)

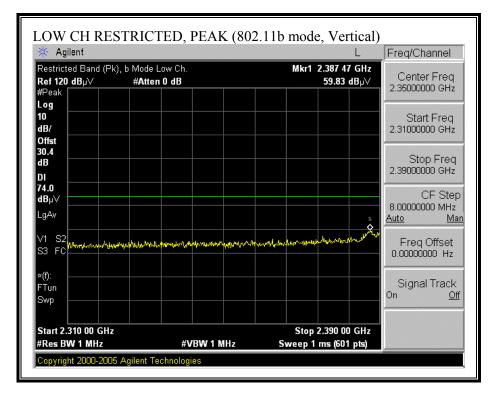
	STRICTED, P.	EAK (802.	1b mode, Horizo	passassassassassassassassassassassas
🔆 Agilent			L	Freq/Channel
Ref 120 dBµ∨ #Peak	k), b Mode Low Ch. #Atten 0 dB		Mkr1 2.387 33 GH; 58.63 dBµ∨	Contor Frog
Log 10 dB/ Offst				Start Freq 2.31000000 GHz
30.4 dB DI				Stop Freq 2.39000000 GHz
74.0 dBµ√ LgAv				CF Step 8.0000000 MHz <u>Auto Mar</u>
V1 S2 S3 FC	yellisterskrivelinetersperielskoursk	www.men.men.	hand many and a strate	Freq Offset 0.00000000 Hz
≈(f): FTun Swp				Signal Track On <u>Off</u>
Start 2.310 00 GH;			Stop 2.390 00 GHz	2
#Res BW 1 MHz	#VB	W 1 MHz	Sweep 1 ms (601 pts)	

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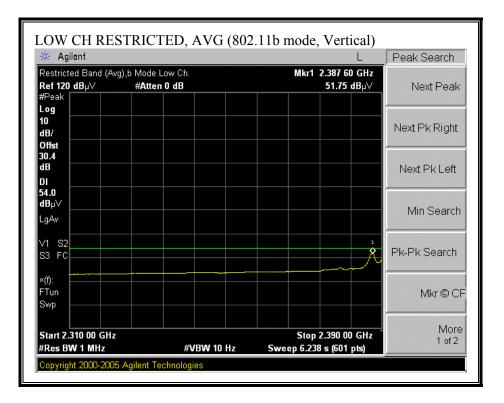


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RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, 2412 MHz, VERTICAL)

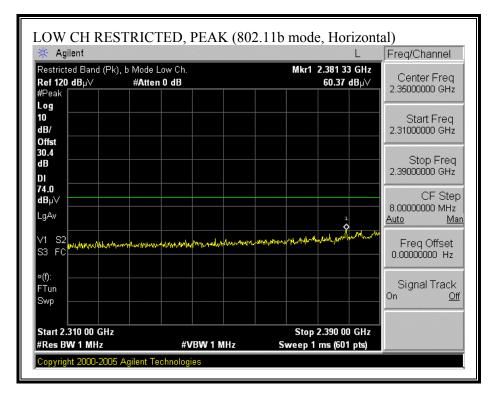


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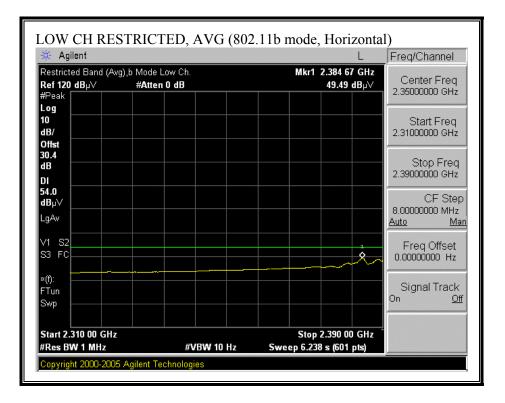


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RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, 2417 MHz, HORIZONTAL)

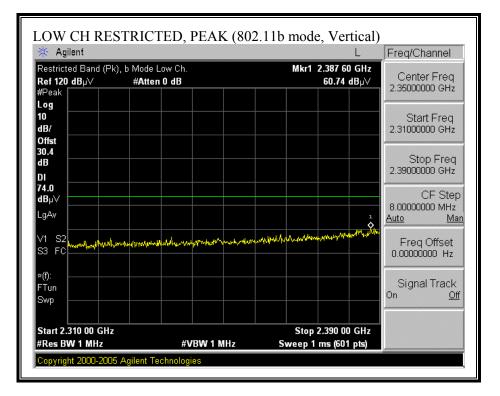


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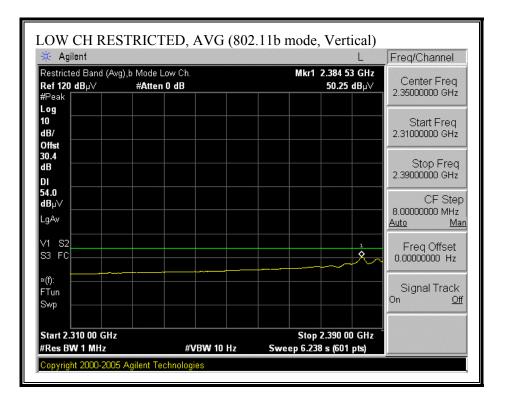


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RESTRICTED BANDEDGE (b MODE, LOW CHANNEL, 2417 MHz, VERTICAL)

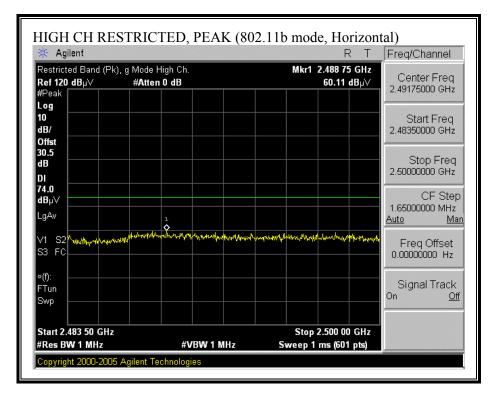


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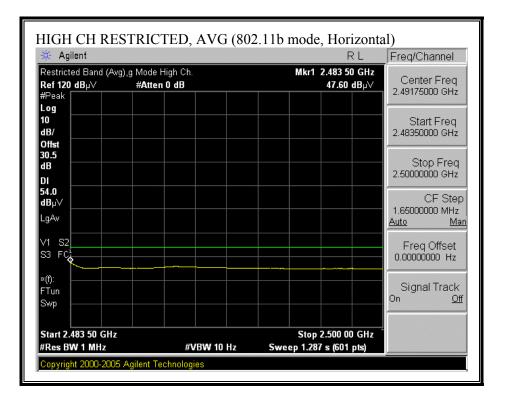


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RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, 2457 MHz, HORIZONTAL)

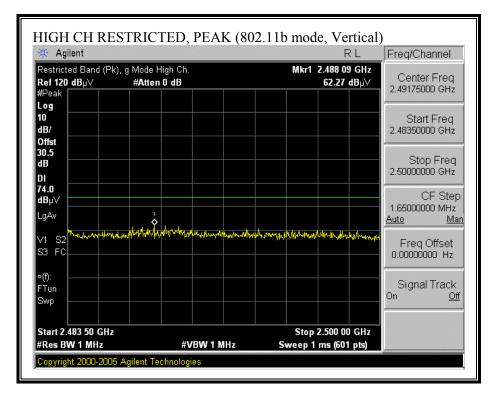


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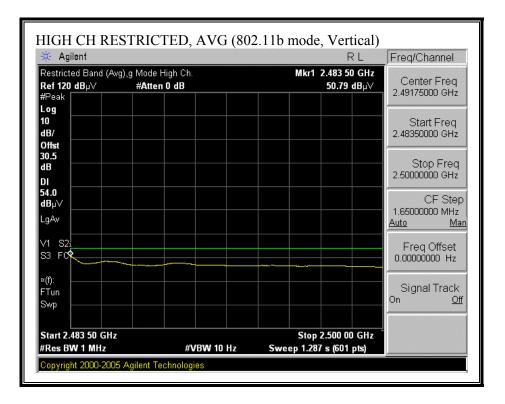


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RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, 2457 MHz, VERTICAL)

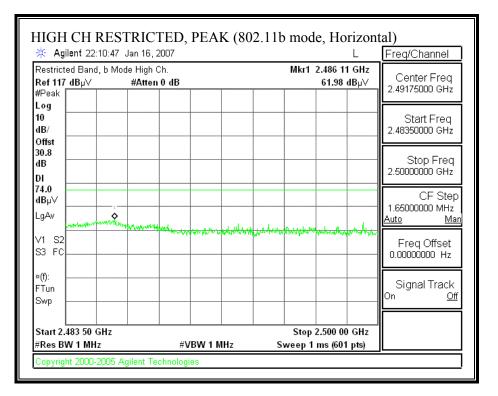


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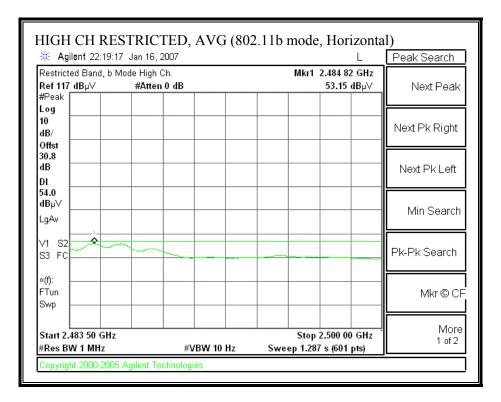


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RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, 2462 MHz, HORIZONTAL)

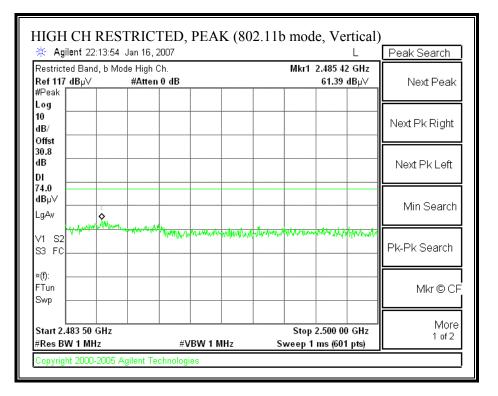


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RESTRICTED BANDEDGE (b MODE, HIGH CHANNEL, 2462 MHz, VERTICAL)



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🔆 Agilent 22:14:				L	Peak Search
Restricted Band, b Ref 117_dB µ∨	Mode High Ch. #Atten 0 dB		Mkr1	2.486 17 GHz 51.67 dBµ∨	Next Peak
#Peak Log					
10 dB/					Next Pk Right
Offst 30.8 dB					Next Pk Left
DI					
54.0 dBµ∨					Min Search
LgAv					
V1 S2	×				Pk-Pk Search
×(f):					┣━━━━
FTun Swp					Mkr © CF
Start 2.483 50 GHz ≭Res BW 1 MHz		#VBW 10 Hz	•	o 2.500 00 GHz 87 s (601 pts)	More 1 of 2

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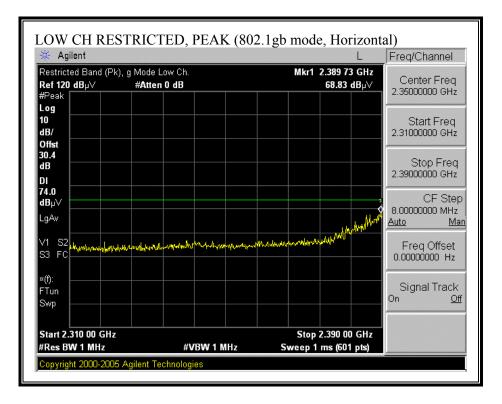
HARMONICS AND SPURIOUS EMISSIONS (b MODE)

roject Test En Configu	#: O6U] gineer: ration:	Thanh Ng EUT & Hit	•												
est Eq	uipmen	<u>t:</u>													
н	orn 1-	18GHz	Pre-ar	mplifer	1-260	GHz	Pre-am	plifer	26-40GH	Iz	H	orn > 18(GHz		Limit
T73; §	5/N: 671	7 @3m	▼ T34 HI	P 8449B		-				•				•	FCC 15.205
	uency Ca 2 foot nh 1770	cable	•	3 foot o	able	T	12 Thanh	foot c 208946		HP	HPF F_4.0GHz	Re	ject Filte	RB	<u>k Measurements</u> W=VBW=1MHz age Measurements =1MHz ; VBW=10Hz
f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	Fltr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes
GHz	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	0	dBuV/m	dBuV/m	dB	dB	(V/H)
ow Chan															
824 824	3.0 3.0	51.57 52.84	50.00 50.78	33.7 33.7	2.8 2.8	-34.8 -34.8	0.0 0.0	0.0 0.0	53.8 55.1	52.3 53.0	74 74	54 54	-20.2 -18.9	-1.7 -1.0	V H
id Chan			20170			-548	0.0	0.0					-100	-1.0	
874	3.0	50.90	47.91	33.8	2.8	-34.8	Q.O	0.6	53 <i>3</i>	50 <i>.</i> 3	74	54	- 20.7	-3.7	v
311 2.185	3.0 3.0	42.41 41.46	42.37 30.12	35.5 38.5	33 43	-34.1 -32.5	0.0	0.0 0.9	47.8	47.7 41.4	74 74	54 54	-26.2 -21.3	-6.3 -12.6	v v
2.185 874	3.0	41.46 52.55	30.12 50.61	38.5	4.3 2.8	-32.5 -34.8	0.0 0.0	0.6	52.7 54.9	41.4 53.0	74 74	54 54	-21.3 -19.1	-12.6 -1.0	<u> </u>
311	3.0	43.87	32.73	35.5	33	-34.0	0.0	0.0	49.2	38.1	74	54 54	-19.1	-15.9	Н
2.185	3.0	43.10	30.34	38.5	43	-32.5	0.0	0.9	54.4	41.6	74	54	-19.6	-12.4	Н
igh Cha															
924 386	3.0 3.0	54.49 44.49	50.64 34.63	33.8 35.6	2.8 3.3	-34.8 -34.1	0.0 0.0	0.0 6.0	56.9 50.0	53.1 40.1	74 74	54 54	-17.1 -24.0	-0 <i>9</i> -13.9	v v
380 2.310	3.0	44.49	34.03	38.5	3.3 4.4	-34.1	0.0	0.0	53.3	40.1	74	54 54	-24.0	-13.9 -12.4	v V
924	3.0	52.50	50.81	33.8	2.8	-34.8	0.0	0.0	55.0	53.3	74	54	-19.0	-0.7	H
386	3.0	45.33	36.50	35.6	33	-34.1	0.0	0.0	50.8	42.0	74	54	-23.2	-12.0	Н
2.310	3.0	45.24	36.27	38.5	4.4	-32.5	0.0	0.9	56.6	47.6	74	54	-17.4	-6.4	H
		Measurem Distance to Analyzer R Antenna F: Cable Los:	eading actor	у		Amp D Corr Avg Peak HPF	Average	Corre Field : d Peal	ct to 3 met Strength @ k Field Stre	3 m		Pk Lim Avg Mar	Peak Fiel Margin vs	Field Strengt d Strength L :. Average L :. Peak Limit	.imit .imit

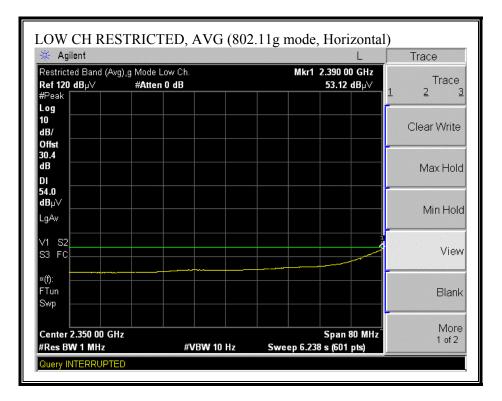
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11g Legacy Mode

RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2412 MHz, HORIZONTAL)

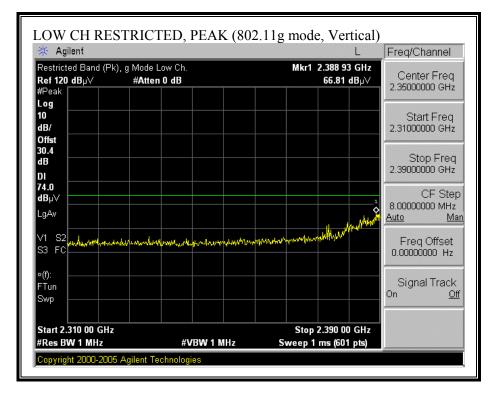


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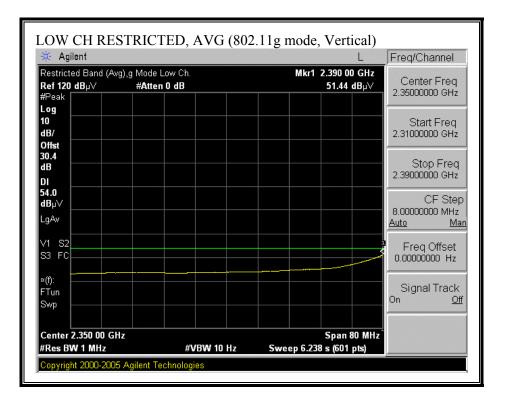


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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2412 MHz, VERTICAL)

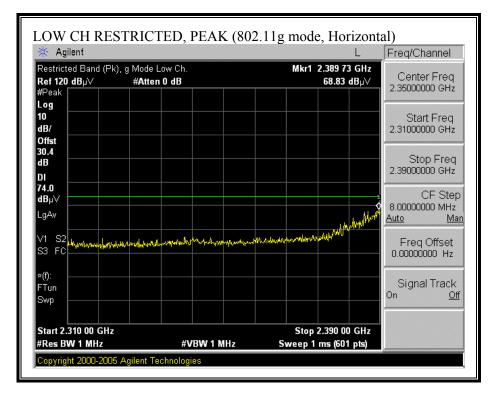


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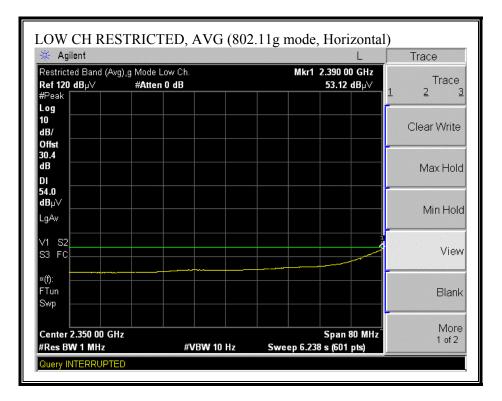


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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2417 MHz, HORIZONTAL)

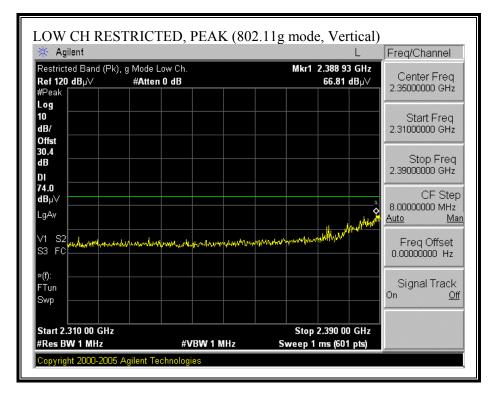


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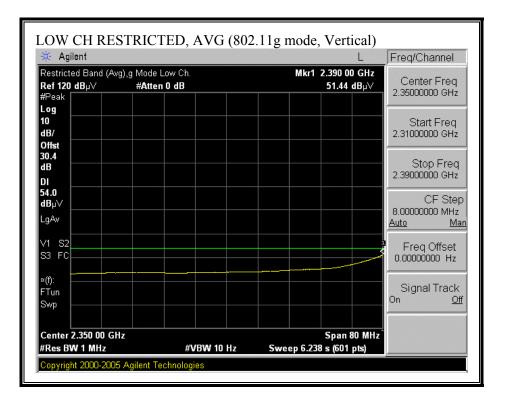


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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2417 MHz, VERTICAL)

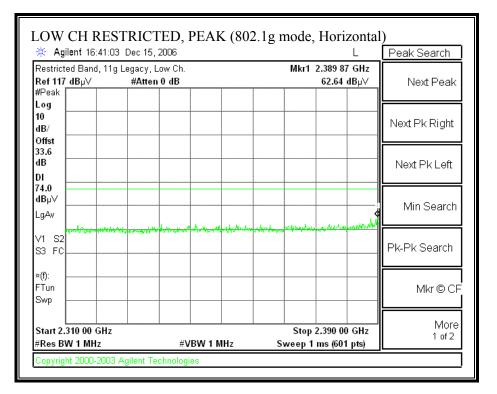


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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2422 MHz, HORIZONTAL)

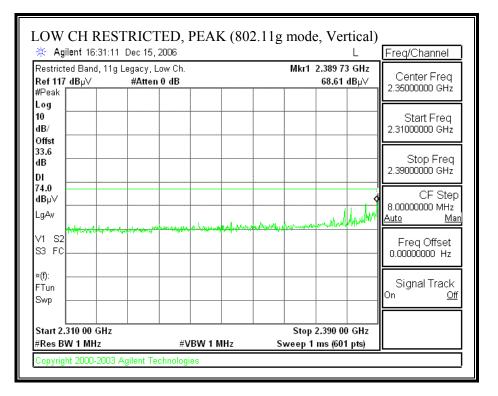


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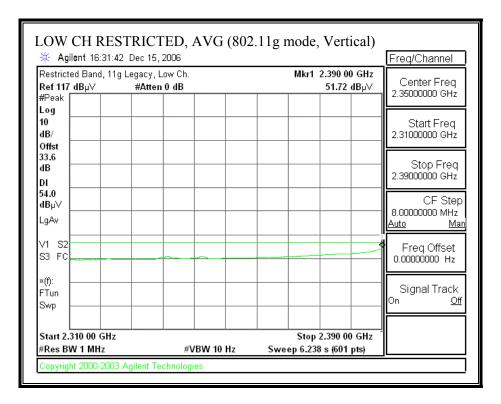
🔆 Agilent 16:41:3		802.11g mode, Horizont	Peak Search
Restricted Band, 11, Ref 117 dB µ∨ #Peak	g Legacy, Low Ch. #Atten 0 dB	Mkr1 2.390 00 GHz 48.47 dBµ∀	Next Peak
Log 10 dB/			Next Pk Right
33.6 dB DI			Next Pk Left
54.0 dBµ∨ _gAv			Min Search
V1 S2			Pk-Pk Search
«(f): FTun Swp			Mkr©C
Start 2.310 00 GHz #Res BW 1 MHz	#VBW 10 H;	Stop 2.390 00 GHz z Sweep 6.238 s (601 pts)	More 1 of 2

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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2422 MHz, VERTICAL)

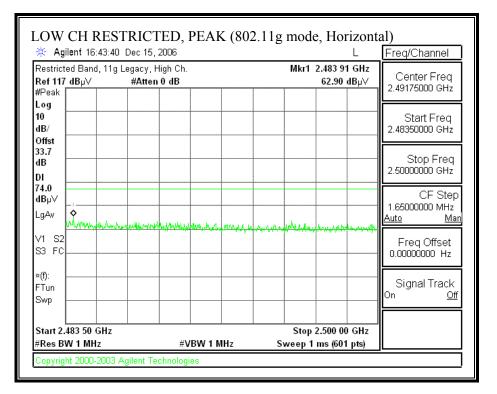


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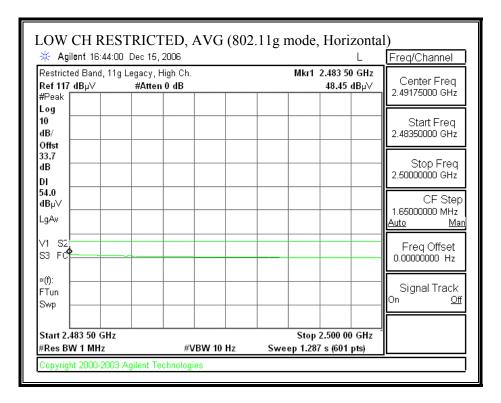


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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2452 MHz, HORIZONTAL)

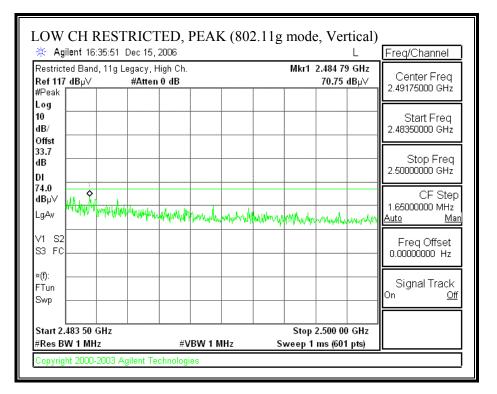


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RESTRICTED BANDEDGE (g MODE, LOW CHANNEL, 2452 MHz, VERTICAL)

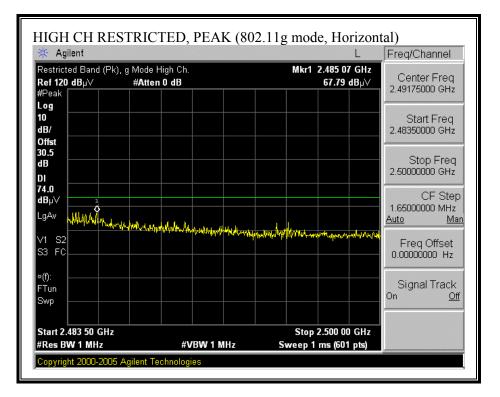


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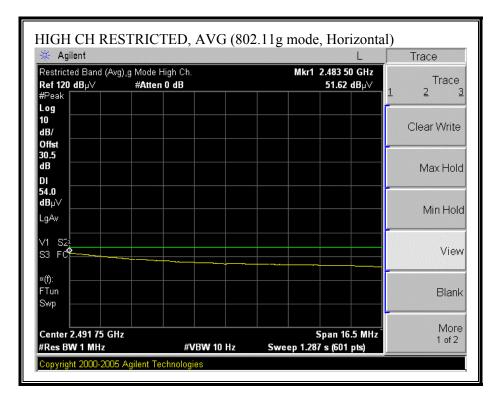
🔆 Agilent 16:36:08 [802.11g mode, Vertical) R T	Freq/Channel
Restricted Band, 11g Le Ref 117 dB µ∀ #Peak	gacy, High Ch. #Atten 0 dB	Mkr1 2.483 53 GHz 52.85 dBµ∀	Center Freq 2.49175000 GHz
Log 10 dB/			Start Freq 2.48350000 GHz
Offst 33.7 dB DI			- Stop Freq 2.5000000 GHz
54.0 dBµ∨ LgAv			CF Step 1.65000000 MHz <u>Auto Mar</u>
V1 S2 S3 FC			Freq Offset 0.00000000 Hz
»(f): FTun Swp			Signal Track On <u>Off</u>
Start 2.483 50 GHz #Res BW 1 MHz	#VBW 10 Hz	Stop 2.500 00 GHz Sweep 1.287 s (601 pts)	ļ

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RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2457 MHz, HORIZONTAL)

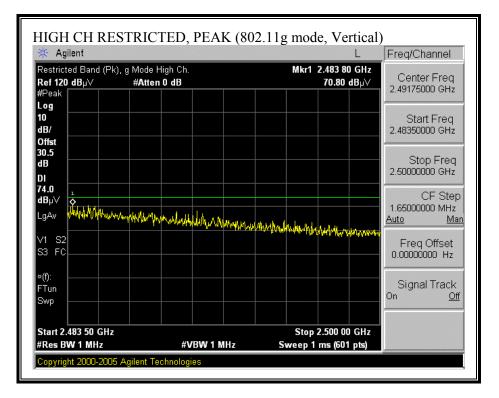


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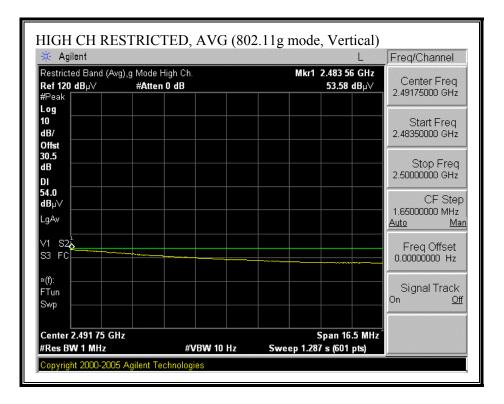


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RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2457 MHz, VERTICAL)

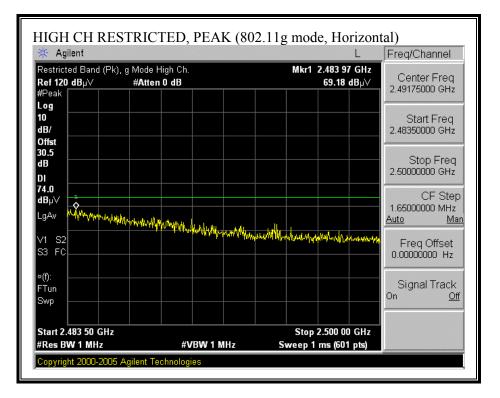


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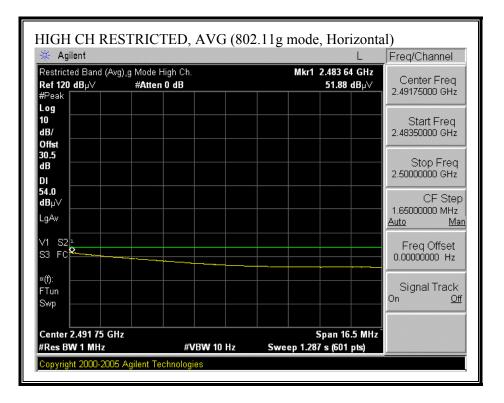


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RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2462 MHz, HORIZONTAL)

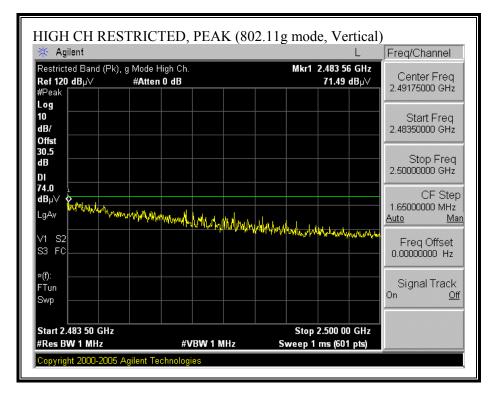


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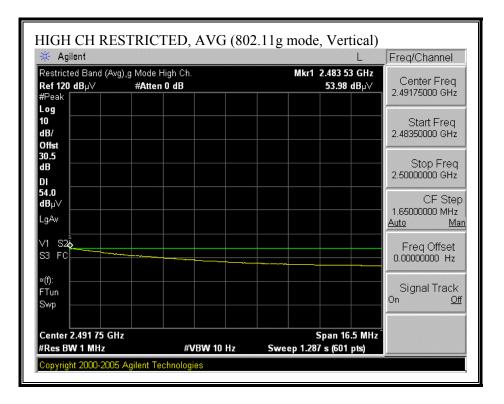


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RESTRICTED BANDEDGE (g MODE, HIGH CHANNEL, 2462 MHz, VERTICAL)



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HARMONICS AND SPURIOUS EMISSIONS (g MODE)

roject Compan CUT De CUT M/ CUT S/I CuT S/I	#:06U1 ay: Broa escriptic /N: BC N: 107 rget: F(dCom Corj	poration b/g Mini PC C 247	I card											
est Eq	uipmen	<u>t:</u>													
н	orn 1-	18GHz	Pre-ar	nplifer	1-260	SHz	Pre-am	plifer	26-40GH	z	H	orn > 180	GHz		Limit
T73; S	S/N: 671	7 @3m	- T34 H	P 8449B		-				-				-	FCC 15.205
- Hi Frec	quency Cal	bles													
	2 foot nh 1770		3	footo	able		12 t	foot c 208946		НР	HPF F_4.0GHz	Re	ject Filter	RB	<u>x Measurements</u> W=VBW=1MHz ge Measurements
						•			•		-				1MHz; VBW=10Hz
f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Corr	Fltr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar A	Avg Mar	Notes
GHz	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB		dBuV/m		÷	dB	dB	(V/H)
	onics Sj	ourious						ļ							
ew Char 824	1.0 3.0	47.12	37.62	33.7	2.8	-34.8	0.0	0.0	49.4	39.9	74	54	-24.6	-14.1	v
2.060	3.0	42.93	30.46	38.5	43	-32.5	0.0	0.9	54.2	41.7	74	54	-19.8	-12.3	v
824	3.0	50.03	45.38	33.7	2.8	-34.8	0.0	6.0	52.3	47.6	74	54	-21.7	-6.4	H
2.060 id Chan	3.0 mel	43.90	31.50	38.5	4.3	-32.5	0.0	0.9	55.1	42.7	74	54	-18.9	-11.3	H
на слан 870	3.0	53.69	40.72	33.8	2.8	-34.8	0.0	6.0	56.0	43.1	74	54	-18.0	-10.9	v
311	3.0	43.56	30.79	35.5	33	-34.1	0.0	0.6	48.9	36.2	74	54	-25.1	-17.8	V
2.185	3.0	52.01	30.26	38.5	43	-32.5	0.0	0.9	63.3	41.5	74	54	-10.7	-12.5	V
874 311	3.0 3.0	54.34 44.66	50.14 31.71	33.8 35.5	2.8 3.3	-34.8 -34.1	0.0 0.0	6.0 6.0	56.7 50.0	52.5 37.1	74 74	54 54	-17.3 -24.0	-1.5 -16.9	H H
2.185	3.0	44.00	31./1	35.5	33 43	-34.1	0.0	0.9	53.5	41.5	74 74	54 54	-24.0	-10.9	<u>H</u>
igh Cha	nnel			•	<u></u>					•					
924	3.0	50.50	39.21	33.8	2.8	-34.8	0.0	6.0	53.0	41.7	74	54	-21.0	-12.3	v
386 2.310	3.0 3.0	46.09 42.41	33.79 30.23	35.6 38.5	3.3 4.4	-34.1 -32.5	0.0 0.0	0.0 0.9	51.6 53.7	39.3 41.5	74 74	54 54	-22.4 -20.3	-14.7 -12.5	v
924	3.0	42.41 55.39	30.23 50.09	38.5	4.4 2.8	-32.5	0.0	0.0	53./ 57.8	41.5 52.5	74 74	54 54	-20.3	-125	м Н
386	3.0	50.74	35.53	35.6	33	-34.1	0.0	0.0	56.2	41.0	74	54	-17.8	-13,0	Н
2.310	3.0	43.21	30.27	38.5	4.4	-32.5	0.0	0.9	54.5	41.6	74	54	-19 <i>5</i>	-12.4	H
purious 057	Emission 3.0	ເຣ 60.01	43.42	24.0	13	-38.2	0.0	0.0	47.2	30.6	74	54	-26.8	-23.4	v
065	3.0	59.42	43.42	24.0	13	-38.2	0.0	0.0	47.2	30.5	74	54 54	-20.6	-23.5	H
195	3.0	39.94	56.81	24.5	1.4	-38.0	0.0	0.0	27.8	44.7	74	54	-46.2	-9.3	Н
		Measureme Distance to Analyzer R Antenna Fa Cable Loss	eading actor	y		Amp D Corr Avg Peak HPF	Average	Corre Field S d Peal	ct to 3 mete Strength @ c Field Stre	3 m		Pk Lim Avg Mar	Average Fia Peak Field : Margin vs. 1 Margin vs. 1	Strength Li Average Li	imit imit

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HARMONICS AND SPURIOUS EMISSIONS (g MODE)

	uipmen orn 1-	18GHz	Pre-a	mplifer 1-26	GHz	Pre-am	plifer	26-40GH	z	н	orn > 18(GHz		Limit
T120;	S/N: 29	310 @3m	- T144	Miteq 3008A0	0931 🖵				-				-	FCC 15.205
	quency Ca 2 foot n 17707	cable		3 foot cable	•	12 Vien 19	foot c)72090		HF	HPF PF_4.0GHz	Re -	ject Filte	RB Avera	<u>k Measurements</u> W=VBW=1MHz age Measurements =1MHz ; VBW=10Hz
f ;Hz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF CL dB/m dB	· ·	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	-	Pk Mar dB	Avg Mar dB	Notes (V/H)
) СН ,	2437 M	Hz												
74 74	3.0 3.0	52.4 47.1	47.8 38.3	33.7 3.4 33.7 3.4		0.0 0.0	6.0 6.0	53.7 48.4	49.1 39.6	74 74	54 54	-20.3 -25.6	-49 -14,4	H V
	f Dist Read AF CL		ent Frequenc Antenna eading actor	were detected al	Amp	Preamp (Distance Average	Gain Corre Field S ed Peal	ct to 3 mete Strength @ c Field Stre	3 m		Pk Lim Avg Mar	Peak Fiel Margin vs	field Strengt I Strength L . Average L . Peak Limit	imit imit

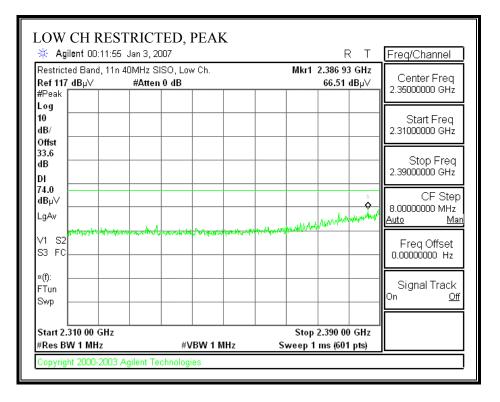
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802.11n Mode 20 MHz SISO is covered by the worst case 802.11g mode Legacy testing.

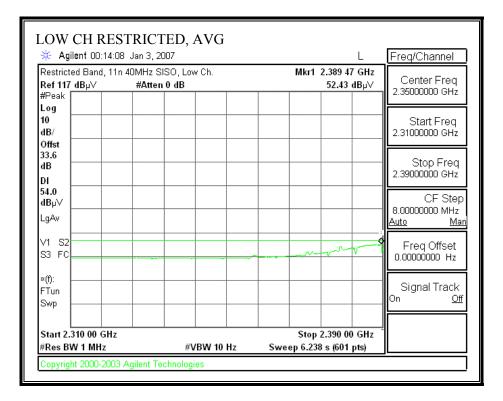
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802.11n Mode 40 MHz SISO

LOW CHANNEL, 2422 MHz, HORIZONTAL

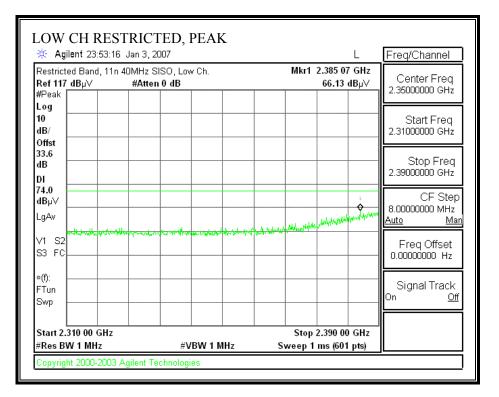


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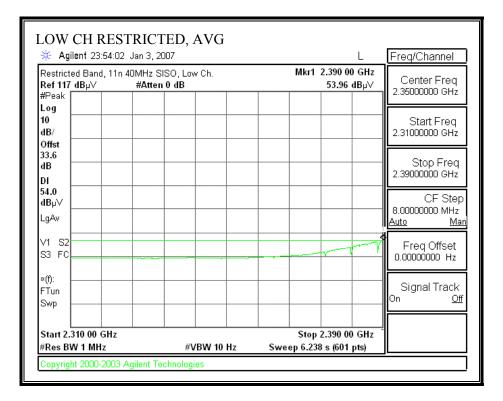


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RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, VERTICAL)

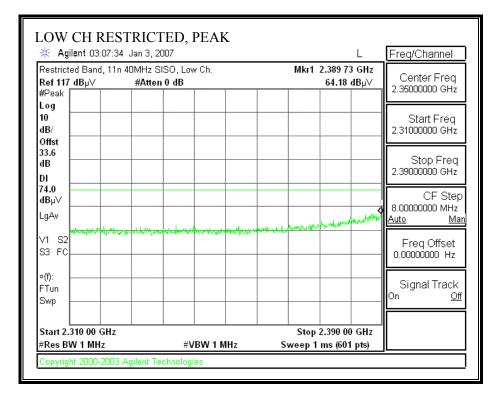


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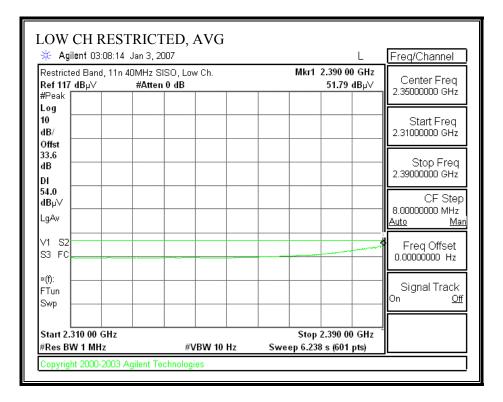


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RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, HORIZONTAL)

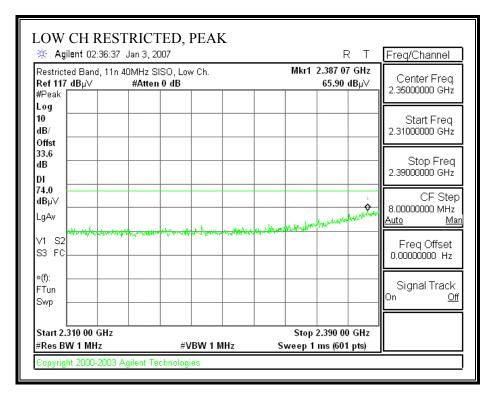


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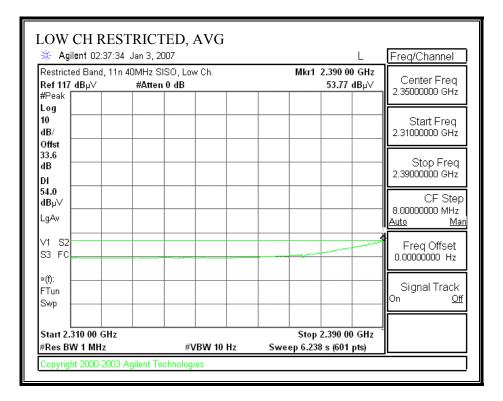


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RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, VERTICAL)

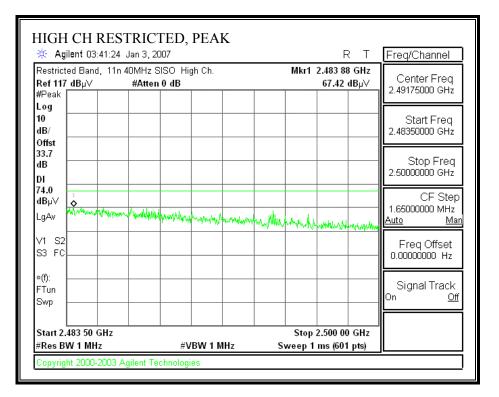


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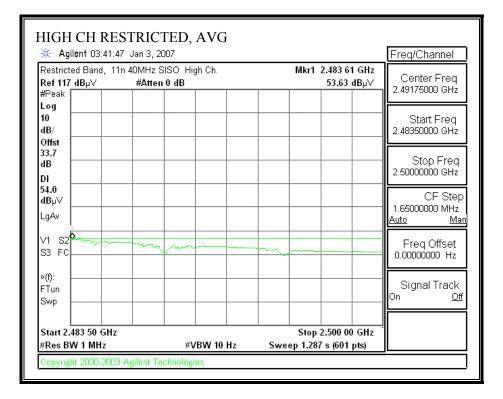


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RESTRICTED BANDEDGE (HIGHCHANNEL, 2447MHz, HORIZONTAL)

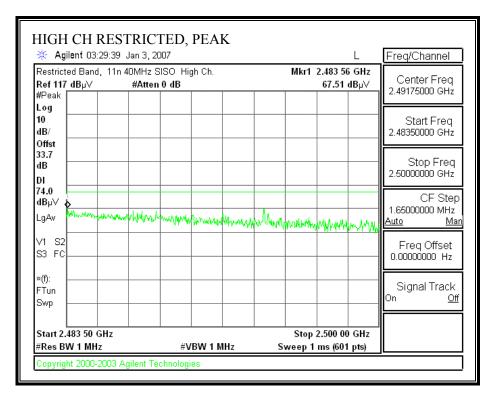


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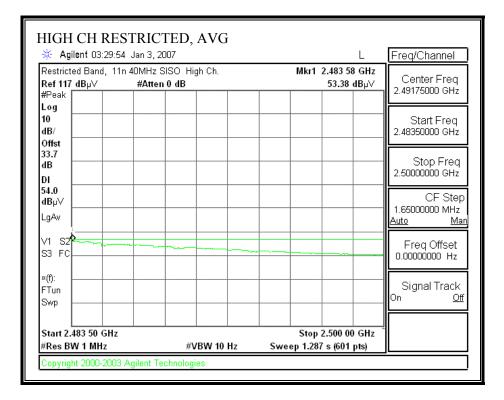


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2447 MHz, VERTICAL)

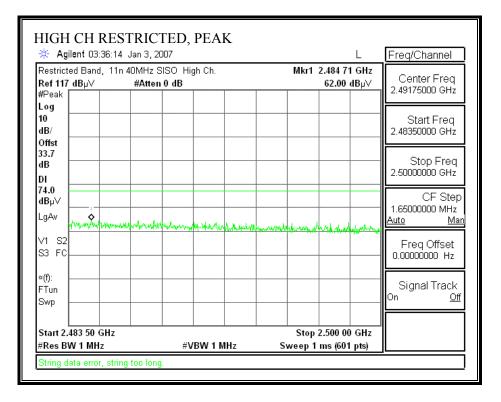


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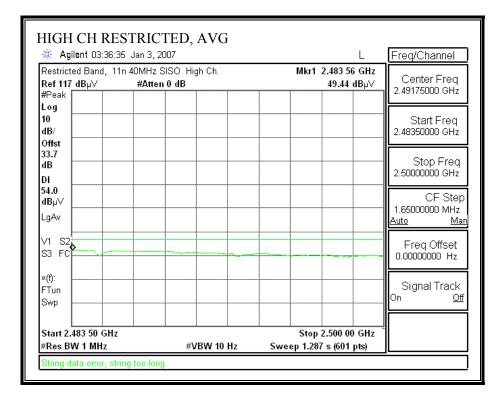


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2452 MHz, HORIZONTAL)

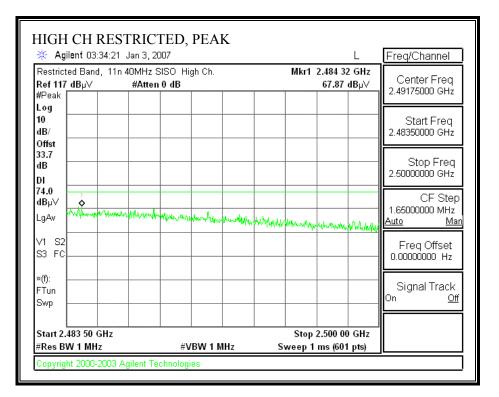


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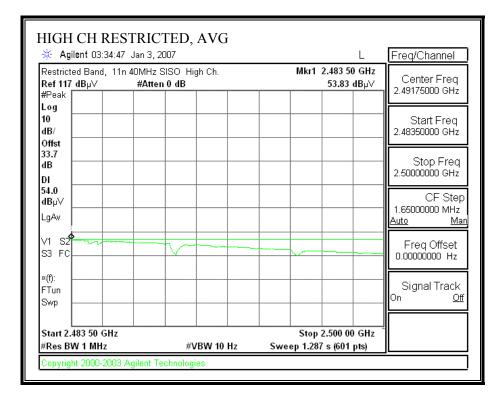


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2452 MHz, VERTICAL)



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HARMONICS AND SPURIOUS EMISSIONS (11n Mode 40 MHz SISO)

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										-	organi	ervices, ivi	runcation se	nce ce	Complia
													dcom	v: Broa	Company
															roject #
) ate: 01
													Vien Tran		
													EUT & Dell		
												MHZ 5150	Hz_11n 40%;	x 2.4 G	lode: 1
													t:	iipment	est Equ
Limit		GHz	orn > 180	Но	z	26-40GH	plifer	Pre-am	Hz	1-260	nplifer	Pre-ar	18GHz		
_ FCC 15.205 _					-		-			342	teq 924	T87 M	310 @3m 🖕	S/N+ 203	T120+ 9
	_				•				•	J4Z	ieq 524	107 1	- To @5iii	3/N. 233	1120, 1
													oles	uency Cab	— Hi Frequ
Peak Measurements	Pe	ject Filte	Bo	HPF		able	foot c	12		able	foot c	3	cable	2 foot	
RBW=VBW=1MHz	R	geotrite								abio		Ŭ	cabic	21000	-
Average Measurements			•	_4.0GHz	HPF	5 🗸	720900	Vien 19	•				005	177079	Vien
RBW=1MHz; VBW=10Hz	RBW														
Avg Mar Notes	Avg Ma	Pk Mar	Avg Tim	Pk Lim	Avg	Peak	Fltr	D Corr	Amp	CL	AF	Read Ava	Read Pk F	Dist	f
dB (V/H)	-	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	dB	dB	dB/m	dBuV	dBuV	(m)	I GHz
	<u></u>			um	um	u.v.m		<u></u>		<u></u>	antin				h 3,2422
-139 V		-26.2	54	74	40.1	47.8	0.6	0.0	-45.3	3.4	33.7	47.7	55.4	3.0	4.874
-14.4 V		-23.9	54	74	39.6	50.1	0.0	0.0	-43.2	3.9	35.2	43.1	53.6	3.0	7.311
-53 H -152 H		-23.3 -21.8	54 54	74 74	48.7 38.8	50.7 52.2	0.0 0.0	0.0 0.0	-45.3 -43.2	3.4 3.9	33.7 35.2	56.3 42.3	58.3 55.7	3.0 3.0	4.874 7.311
							0.0								
															h 6, 2437
-14.0 V -15.6 V		-25.8 -23.8	54 54	74 74	40.0 38.4	48.2 50.2	6.0 6.0	0.0 0.0	-45.3 -43.2	3.4 3.9	33.7 35.2	47.6 41.9	55.8 53.7	3.0 3.0	4.874 7.311
-43 H		-20.0	54	74	49.7	54.0	0.0	0.0	-45.3	3.4	33.7	57.3	61.6	3.0	4.874
-129 H		-19.0	54	74	41.1	55.D	6.0	0.0	-43.2	39	35.2	44.6	58.5	3.0	7.311
														7 1411-7	h 9, 2452
-14.3 V	-14.3	- 26.0	54	74	39.7	48.0	0.6	0.0	-45.3	3.4	33.8	47.2	55.5	3.0	4.904
-15.6 V		-24.7	54	74	38.4	49 <i>.</i> 3	0.0	0.0	-43.1	39	35.2	41.8	52.7	3.0	7.356
-4.6 H -13.9 H		-20.2 -20.6	54 54	74 74	49.4 40.1	53.8 53.4	0.0 0.0	0.0 0.0	-45.3 -43.1	3.4 3.9	33.8 35.2	56.9 43.5	61.3 56.8	3.0 3.0	4.904 7.356
-155 11	-155	-20.0			40.1	<i>33</i> 4	0.0	0.0	-40.1	33	334	452	50.8		7.550
							se floor	system noi	ted above	re detec	sions we	lo other emis	N		
eld Strength Limit	ield Stren	Average F	Avo Lim				Fain	Preamp (Amp		,	t Frequency	Measurement	f	
Strength Limit		-	-		rs	t to 3 mete		-	-		,		Distance to A		
Average Limit	<u> </u>					trength @			Avg				Analyzer Rea		
-	-	Margin vs.	-			Field Stre		-	Peak			-	Antenna Fact		
							s Filter	High Pas	HPF				Cable Loss	CL	

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7.5.3. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

802.11a Legacy Mode

HARMONICS AND SPURIOUS EMISSIONS (802.11a MODE)

Test En; Project ; Compan EUT De EUT M/ EUT S/N Test Tai Mode O	nice Če gineer: #:06U1(y: Broa scriptio N: BC N: BC N: 107 rget: F(of Opera	rtification { Thanh Ngu)233-1 dCom Corj n:2x2 Dual M94321M(CC Part15.2 tion: Tx 5.3	poration l Band MIM C 247	organ]		pen Fiel	d Site								
<u>Test Eq</u>	uipmen orn 1-	-	Pre-ar	nnlifer	1.26	сц <u>.</u>	Pro om	nlifor	26-40GH	-		orn > 18	сц .		Limit
	5/N: 6717			9 8449B		-	TTe-am	piner	20-40311				0112	-	FCC 15.209
 ┌─ Hi Freq	juency Cat	oles													
	2 foot	cable	3	foot c	able		12	foot c	able		HPF	Re	eject Filte		<u>k Measurements</u> W=VBW=1MHz
Tha	nh 1770	79008				•	Thanh	208946	•003 -	H	PF_7.6GHz	•		Avera	n <u>ge Measurements</u> =1MHz ; VBW=10Hz
f	Dist	Read Pk	Read Avg.	AF	CL	Amp	D Сон	Fltr	Peak	Avg	1	Avg Lim	Pk Mar	Avg Mar	
GHz Low 5745	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	u dBuV/m	dBuV/m	dB	dB	(V/H)
11.490	3.0	47.0	34.3	38.3	4.2	-32.5	0.0	0.7	57.7	45.0	74	54	-16.3	-9.0	v
17.235 11.490	3.0 3.0	42.3 54.1	30.4 37.8	42.4 38.3	5.2 4.2	-32.0 -32.5	0.0 0.0	0.6 0.7	58.4 64.7	46.6 48.5	74 74	54 54	-15.6 -9.3	-7.4 -5.5	V H
17.235	3.0	42.9	30.2	42.4	5.2	-32.0	0.0	0.6	59.1	46.4	74	54	-14.9	-7.6	H
Fx Mid Cl 1 <i>5</i> 70	k 5785MD 3.0	њ 51.7	35.9	38.3	4.2	-32.5	0.0	0.7	62.4	46.6	74	54	-11.6	-7.4	н
7.355	3.0	41.7	30.3	38_3 43.0	4.2 5.2	-32.5	0.0	U./ 0.6	58.5	40.0	74	54 54	-11.0	-/A -69	H
1.570	3.0	47.6	32.5	38.3	4.2	-32.5	0.0	0.7	58.3	43.2	74	54	-15.7	- 10.8	v
7.355	3.0	43.0	30.4	43.0	5.2	-32.1	0.0	0.0	59 <i>.</i> 9	47.2	74	54	-14.1	- 6.8	v
1.650	:h 5825N 3.0	49.3	33.8	38.5	4.8	-32.5	0.0	0.7	60.8	45.3	74	54	-13.2	-8.7	Н
1.650	3.0	48.8	34.4	38.5	4.8	-32.5	0.0	0.7	60.4	45.9	74	54	-13.6	- 8.1	v
7.475	3.0	45.3	31.4	42.2	63	-32.1	0.0	0.0	62.3	48.3	74	54	-11.7	-5.7	V
7.475	3.0 3.0	44.9 46.1	31.4 32.9	42.2 33.7	63 7.4	-32.1 -32.8	0.0 0.0	0.6 0.0	61.9 54.4	48.4 41.2	74	54 54	-12.1 -19.6	-5.6 -12.8	H H
23.300	3.0	45.9	33.0	33.7	7.4	-32.8	0.0	0.0	54.1	41.3	74	54	-19.9	-12.7	v
		Measureme Distance to Analyzer R Antenna Fa Cable Loss	eading actor	7		Amp D Corr Avg Peak HPF	Average	Corre Field S d Peal	ct to 3 mete Strength @ c Field Stre	3 m		Pk Lim Avg Mar	Average F Peak Field Margin vs. Margin vs.	l Strength L Average L	imit imit

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802.11n Mode 20 MHz SISO is covered by the worst case 802.11a Mode Legacy testing.

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802.11n a MODE 40 MHz SISO

HARMONICS AND SPURIOUS EMISSIONS (802.11n a MODE 40 MHz SISO)

Test Engineer: Thanh Nguyen Configuration: EUT, Hitachi Antenna, Laptop. Mode: Transmit 5 8 GHz_1h=40 MHz SISO Test Equipment: Ital GHZ Pre-amplifer 1-26 GHz Horn > 18 GHZ Limit TI20: S/N: 29310 @3m TI45 Agiten 3008A005(0 Pre-amplifer 26-40 GHZ Horn > 18 GHZ Limit Vien 17079005 TI45 Agiten 3008A005(0 Pre-amplifer 26-40 GHZ Horn > 18 GHZ Limit Vien 17079005 TI45 Agiten 3008A005(0 Paix Measurem RBW=/BMZ Vien 17079005 Paix Measurem RBW=/BMZ Paix Measurem RBW=/BMZ Paix Measurem RBW=/BMZ TI45 Read Avg AF CL Paix Measurem RBW=/BMZ Paix Measurem RBW=/BMZ Paix Measurem RBW=/BMZ TI45 Read Avg AF CL Paix Measurem RBW=/BMZ Paix Measurem RBW=/BMZ <th colspan<="" th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>roject Date:01</th></th>	<th></th> <th>roject Date:01</th>												roject Date:01
Mode: Transmit 5.8GHz_11n40MHz SISO Test Equipment: Horn 1-18GHz Pre-amplifer 1-26GHz Pre-amplifer 26-40GHz Horn > 18GHz Limit T120; S/R: 29310 @3m Pre-amplifer 1-26GHz Pre-amplifer 26-40GHz Horn > 18GHz Limit Image: Signed and													
Test Equipment: Pre-amplifer 1-26GHz Pre-amplifer 26-40GHz Horn > 18GHz Limit T120: S/N: 29310 @3m T145 Agilent 3008A005(*) Pre-amplifer 26-40GHz Horn > 18GHz Limit Vien 177079005 3 foot cable 12 foot cable Pre-amplifer 26-40GHz HPF Reject Filter Peak Measurem RBW=VBW=1M 1 1 1 1 1 0 Not													
Horn 1-18GHz T120; S/N: 29310 @3m Pre-amplifer 1-26GHz T145 Agilent 3008A005(Pre-amplifer 26-40GHz Horn > 18GHz Limit FC 15.20* Image: Sine 29310 @3m T145 Agilent 3008A005(Image: Sine 2030 million								5150		_			
T120; S/N: 29310 @3m T145 Agilent 3008A005t FCC 15.200 # Frequency Cables 3 foot cable 12 foot cable HPF Reject Filter Peak Measurem RBW=10M Average Measurem RBW=10M Average Measurem RBW=10M Average Measure RBW=10M Average Field Strength Limit 1 10 0 0.0 0.7 67.6 53.9 74 54 16.1 8.7 H 11500 3.0 <	GHz Horn > 18GHz L		26-40GH	plifer	Pre-am	Hz	1-260	nplifer	Pre-ar	-			
2 foot cable 3 foot cable 12 foot cable HPF Reject Filter Peak Measurem RBW=UBW=1M Average Measurem RBW=1M Average Measurem RBW=UBW=1M Average Measurem RBW=1M Average Measurem Average Measurem Average Measurem Average Field Strength Limit RBW=1M Average Field Strength Limit Average Margin vs. Average Field Strength Limit Average Margin vs. Average Field Strength Margin vs. Average Limit		- [
Image: Construction Constr		 -			,	_				les	iency Cab	- Hi Freq	
f Dist Read Avg. (m) AF (BBW CL (BBW Amp (BBW D Corr (BB Flr (BB Peak (BB Avg (BB Pk Lim (BB Avg Lim (BB Pk Mar (BB Avg Mar (V/I) Not (BB ch.151 0.0 0.7 64.2 51.7 74 54 -9.8 -2.3 V 7.265 3.0 44.4 30.6 40.3 6.0 -32.0 0.0 0.6 59.3 45.4 74 54 -9.8 -2.3 V 7.265 3.0 44.4 30.6 40.3 6.0 -32.0 0.0 0.6 59.3 45.4 74 54 -14.7 8.6 V 7.265 3.0 43.0 30.5 40.3 6.0 -32.0 0.0 0.6 57.9 45.3 74 54 -16.1 8.7 H 7.265 3.0 43.0 30.5 51 -33.0 0.0 0.7 67.6 53.9 74 54 -16.1 8.3	ELE RELECTENTER		able	foot c	12		able	foot c	3	cable	2 foot		
GHz (m) dBuV dBuV dBm dB dB dB dB dB dB dBuV/m dBuV/m dBuV/m dBuV/m dB dB (V/I) Ch.151 1 53.9 41.4 37.6 5.0 -33.1 0.0 0.7 64.2 51.7 74 54 -9.8 -2.3 V 7.265 3.0 44.4 30.6 40.3 6.0 32.0 0.0 0.6 59.3 45.4 74 54 -14.7 8.6 V 11510 3.0 52.7 39.2 37.6 5.0 -33.1 0.0 0.7 63.0 49.5 74 54 -11.0 -4.5 H 7.265 3.0 43.0 30.5 40.3 6.0 -32.0 0.0 0.6 57.9 45.3 74 54 -16.1 8.7 H 7.265 3.0 42.9 30.7 40.4 6.0 -32.0 0.0			•	720900	Vien 19	•			•	005	177079	Vie	
Ch. 151 Ch. 151 <t< td=""><td>Avg Pk Lim Avg Lim Pk Mar Avg Mar</td><td>Av</td><td>Peak</td><td>Fltr</td><td>D Сон</td><td>Amp</td><td>CL</td><td>AF</td><td>Read Avg.</td><td>Read Pk</td><td>Dist</td><td>f</td></t<>	Avg Pk Lim Avg Lim Pk Mar Avg Mar	Av	Peak	Fltr	D Сон	Amp	CL	AF	Read Avg.	Read Pk	Dist	f	
1510 30 539 41.4 37.6 50 -33.1 0.0 0.7 64.2 51.7 74 54 9.8 -2.3 V 7265 30 44.4 30.6 40.3 6.0 -32.0 0.0 0.6 59.3 45.4 74 54 -9.8 -2.3 V 11510 30 52.7 39.2 37.6 50 -33.1 0.0 0.7 63.0 49.5 74 54 -14.7 8.6 V 1210 3.0 52.7 39.2 37.6 5.0 -33.1 0.0 0.7 63.0 49.5 74 54 -16.1 4.5 H 7265 3.0 43.0 30.5 40.3 6.0 -32.0 0.0 0.6 57.9 453 74 54 -16.1 4.5 H 11590 3.0 57.2 43.5 37.6 5.1 -33.0 0.0 0.7 67.2 53.3 74 54 -16.1 48.3 V 11590 3.0 43.9 </td <td></td> <td>dBu∖</td> <td>dBuV/m</td> <td>dB</td> <td>dB</td> <td>-</td> <td>dB</td> <td>dB/m</td> <td>-</td> <td></td> <td>(m)</td> <td>GHz</td>		dBu∖	dBuV/m	dB	dB	-	dB	dB/m	-		(m)	GHz	
7.265 3.0 44.4 30.6 40.3 6.0 -32.0 0.0 0.6 59.3 45.4 7.4 54 -14.7 .8.6 V 11510 3.0 52.7 39.2 37.6 5.0 -33.1 0.0 0.7 63.0 49.5 7.4 54 -14.7 .8.6 V 7.265 3.0 43.0 30.5 40.3 6.0 -32.0 0.0 0.6 57.9 45.3 7.4 54 -16.1 -8.7 H 7.265 3.0 43.0 30.5 40.3 6.0 -32.0 0.0 0.6 57.9 45.3 7.4 54 -16.1 -8.7 H 11590 3.0 57.2 43.5 37.6 5.1 -33.0 0.0 0.7 67.6 53.9 74 54 -16.1 -8.3 V 11590 3.0 56.8 42.9 37.6 5.1 -33.0 0.0 0.7 67.2 53.3 74 54 -16.1 -8.3 V 11590 3.0<													
11510 3.0 52.7 39.2 37.6 5.0 .33.1 0.0 0.7 63.0 49.5 74 54 .11.0 4.5 H 7.265 3.0 43.0 30.5 40.3 6.0 .32.0 0.0 0.6 57.9 45.3 74 54 .16.1 -8.7 H Ch.159													
17.265 3.0 43.0 30.5 40.3 6.0 -32.0 0.0 0.6 57.9 45.3 74 54 -16.1 -8.7 H Ch.159													
Ch.159 Ch.150 Ch.150 Ch.151 Ch.151<			÷										
1590 3.0 57.2 43.5 37.6 5.1 -33.0 0.0 0.7 67.6 53.9 74 54 -6.4 -0.1 V 7.385 3.0 42.9 30.7 40.4 6.0 -32.0 0.0 0.6 57.9 45.7 74 54 -6.4 -0.1 V 1590 3.0 56.8 42.9 37.6 5.1 -33.0 0.0 0.7 67.2 53.3 74 54 -6.6 -0.7 H 7.885 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -6.8 -0.7 H 7.885 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -16.1 8.9 H 1 No other spurious emissions were detected above 2nd Harmonic. 15.1 -8.9 H -15.1 -8.9 H 1 No other spurious emissions corrected above 2nd Harmonic. 16.0 -16.0 -16.0 <td></td>													
17.385 3.0 42.9 30.7 40.4 6.0 -32.0 0.0 0.6 57.9 45.7 74 54 -16.1 -8.3 V 11.590 3.0 56.8 42.9 37.6 5.1 -33.0 0.0 0.7 67.2 53.3 74 54 -16.1 -8.3 V 17.385 3.0 56.8 42.9 37.6 5.1 -33.0 0.0 0.7 67.2 53.3 74 54 -6.8 -0.7 H 17.385 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -16.1 -8.3 V 17.385 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -15.1 -8.9 H 1 No other spurious emissions were detected above 2nd Harmonic. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1													
1590 3.0 56.8 42.9 37.6 5.1 -33.0 0.0 0.7 67.2 53.3 74 54 -6.8 -0.7 H 7385 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -6.8 -0.7 H 7385 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -6.8 -0.7 H 1 No other spurious emissions were detected above 2nd Harmonic. 1 1.5 -8.9 H 1 No other spurious emissions were detected above 2nd Harmonic. 1 1.6 -1.5													
7.385 3.0 43.9 30.1 40.4 6.0 -32.0 0.0 0.6 58.9 45.1 74 54 -15.1 -8.9 H f Measurement Frequency Amp Preamp Gain Avg Lim Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Pk Lim Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit				ģ									
f Measurement Frequency Amp Preamp Gain Avg Lim Average Field Strength Limit Dist Distance to Antenna D Corr Distance Correct to 3 meters Pk Lim Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit													
Dist Distance to Antenna D Corr Distance Correct to 3 meters Pk Lim Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit	above 2nd Harmonic.	2nd I	detected abov	s were	ıs emission	r spuriou	No othe						
Dist Distance to Antenna DCorr Distance Correct to 3 meters Pk Lim Peak Field Strength Limit Read Analyzer Reading Avg Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit													
Read Analyzer Reading Avg Average Field Strength @ 3 m Avg Mar Margin vs. Average Limit					-			9	• •				
	0												
AF Antenna Factor Peak Calculated Peak Field Strength Pk Mar Margin vs. Peak Limit	0 0 0 0				<u> </u>	~				-			
	Strength Pk Mar Margin vs. Peak Limit	gth											
CL Cable Loss HPF High Pass Filter				s Filter	High Pas	HPF				Cable Loss	CL		
CL Cable Loss HPF High Pass Filter				s Filter	High Pas	HPF				Cable Loss	CL		

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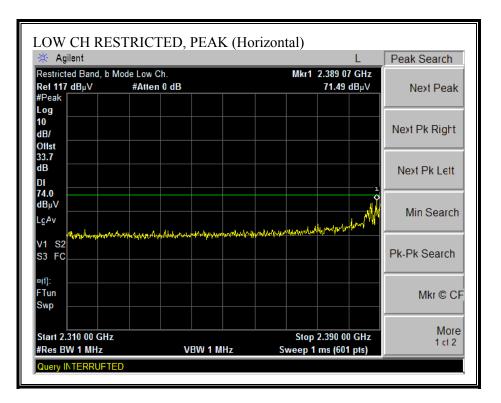
MIMO MODE

7.5.4. TRANSMITTER ABOVE 1 GHz FOR 2400 TO 2483.5 MHz BAND

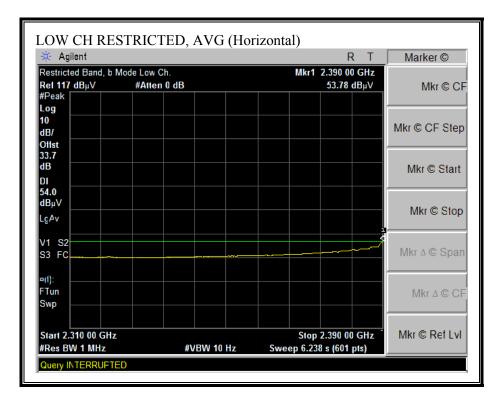
802.11g Mode Legacy CDD is covered by the worst case 802.11n Mode 20 MHz CDD MCS0.

802.11n Mode 20 MHz CDD MCS 0:

RESTRICTED BANDEDGE (LOW CHANNEL, 2412 MHz, HORIZONTAL)

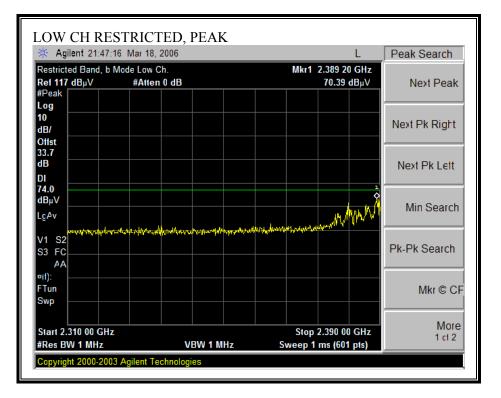


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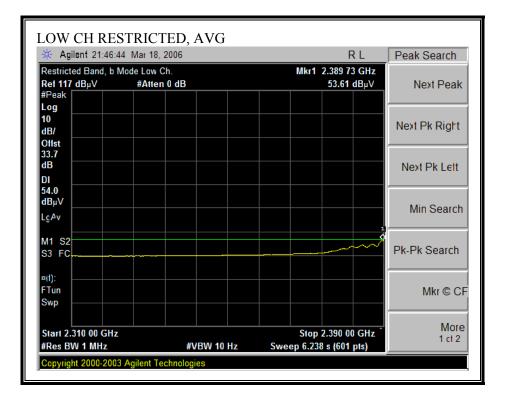


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RESTRICTED BANDEDGE (LOW CHANNEL, 2412 MHz, VERTICAL)

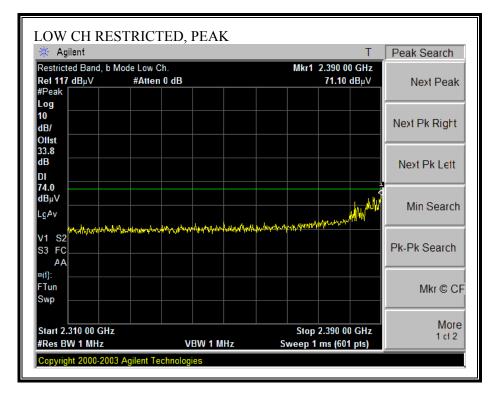


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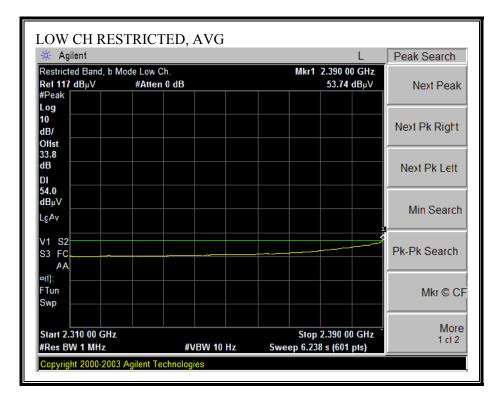


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RESTRICTED BANDEDGE (LOW CHANNEL, 2417 MHz, HORIZONTAL)

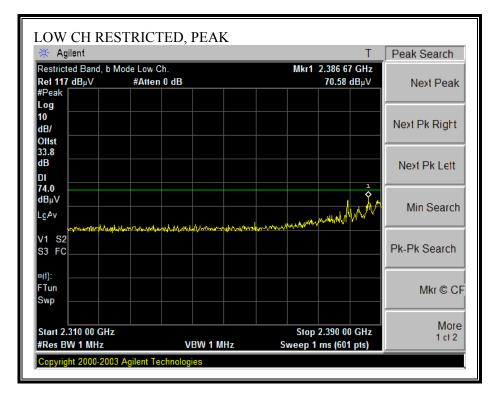


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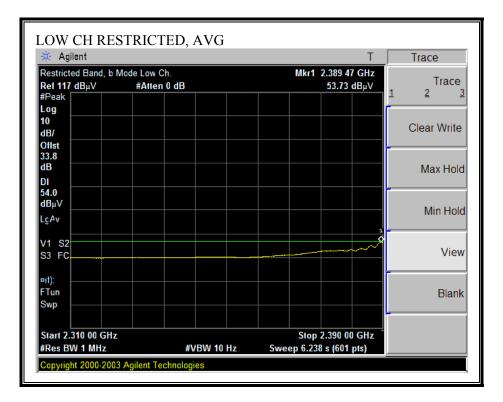


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RESTRICTED BANDEDGE (LOW CHANNEL, 2417 MHz, VERTICAL)

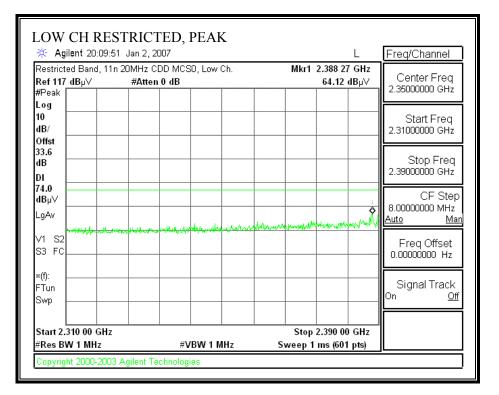


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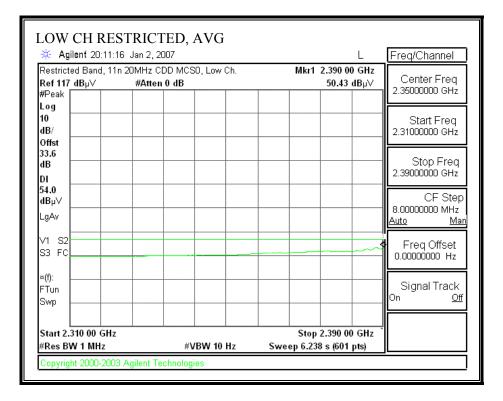


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RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, HORIZONTAL)

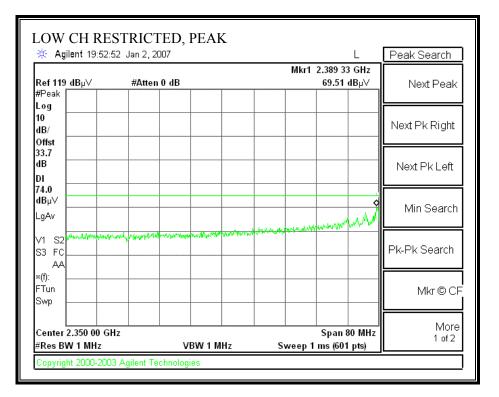


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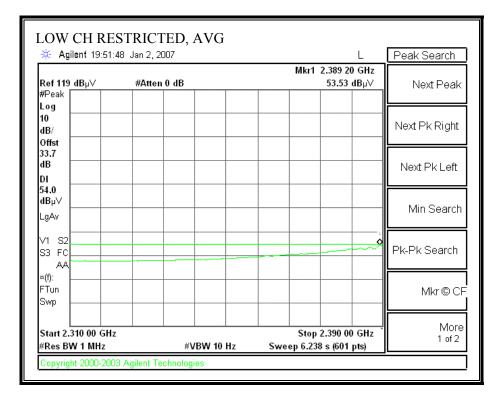


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RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, VERTICAL)

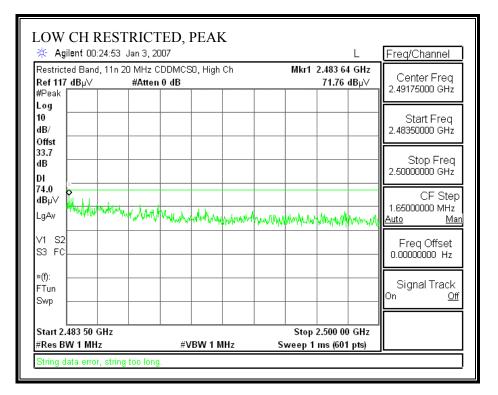


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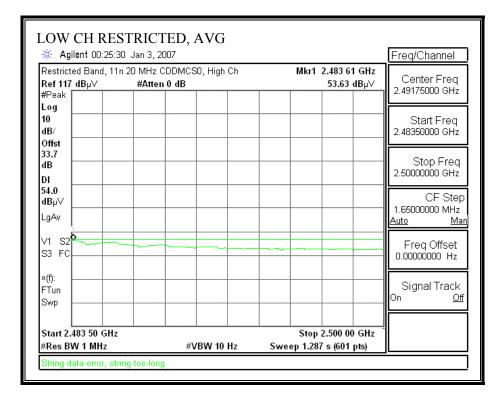


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RESTRICTED BANDEDGE (LOW CHANNEL, 2452 MHz, HORIZONTAL)

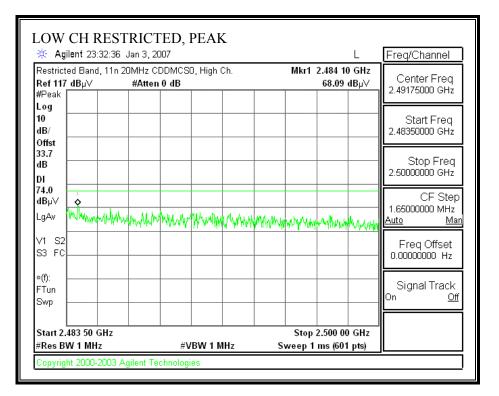


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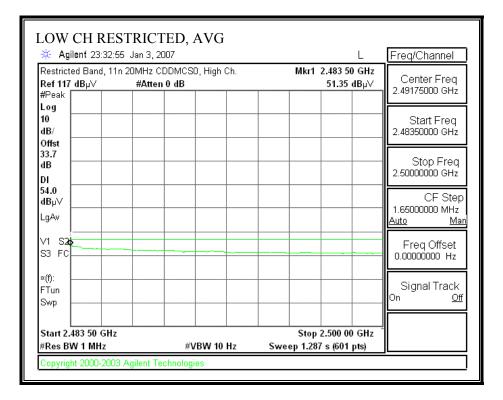


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RESTRICTED BANDEDGE (LOW CHANNEL, 2452 MHz, VERTICAL)

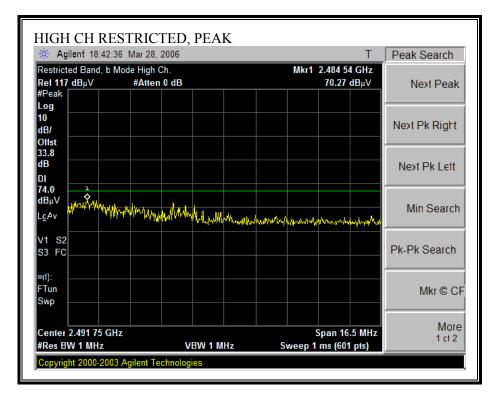


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RESTRICTED BANDEDGE (HIGHCHANNEL, 2457 MHz, HORIZONTAL)

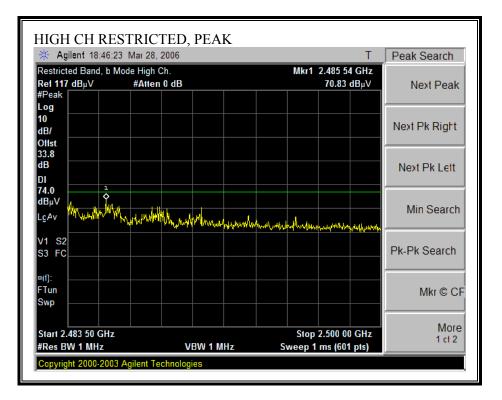


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2457 MHz, VERTICAL)

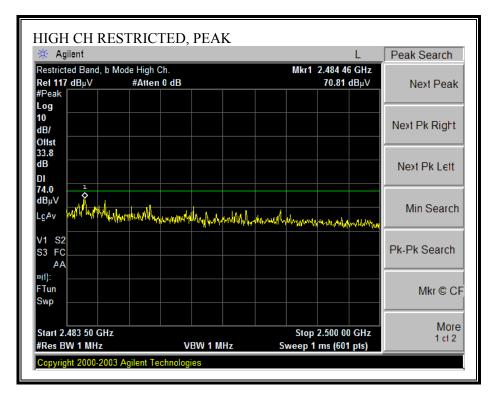


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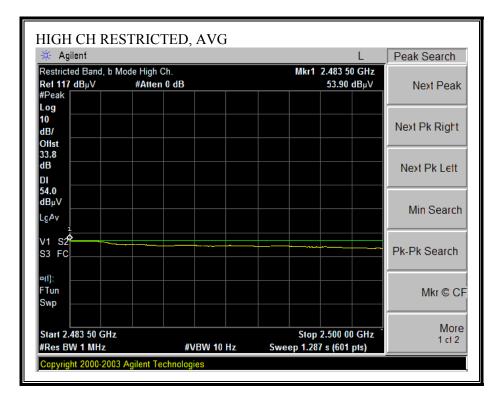


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2462 MHz, HORIZONTAL)

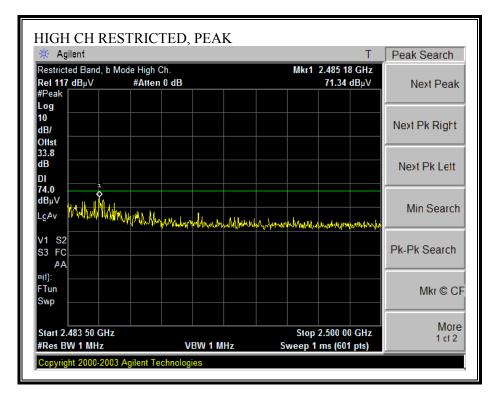


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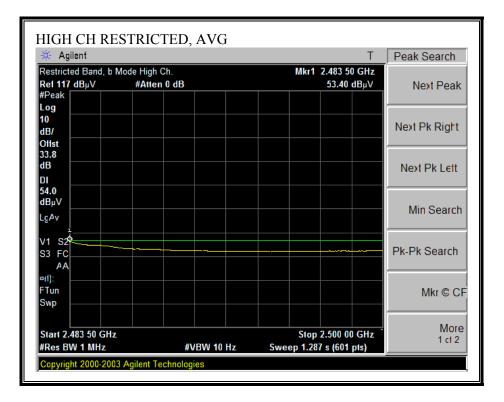


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2462 MHz, VERTICAL)



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HARMONICS AND SPURIOUS EMISSIONS - 20 MHz TX BANDWIDTH

11: -18GHz 1310 @3m ables	T87 M	mplifer liteq 924 3 foot c 1872150	342	SHz •	Pre-am	plifer	26-40GH	7					
i310 @3m ables cable Read Pk	T87 M	liteq 924 3 foot c	342	-	Pre-am	piner	20-40GH			orn > 180		Limit	
ables cable Read Pk	Vien	3 foot c		-				-	н		FCC 45 200		
cable Read Pk	Vien		able	_				•				-	FCC 15.209
Read Pk		1872150		3 foot cable					HPF	Re		Peak Measurements RBW=VBW=1MHz	
	D 2 4		02	•	Vien 19	9720900	•	HP	F_4.0GHz	-		• Avera	ge Measurements 1MHz ; VBW=10Hz
ubuv	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m		Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
lz_17dBm													
62.3	53.3	33.9	2.9	-45.3	0.0	0.6	54.4	45.4	74	54	-19.6	-8.6	V
													H H
46.9	35.7	38.6	4.8	-40.0	0.0	0.9	51.3	40.1	74	54	-22.7	-13.9	н
69.0	61.3	33.9	2.9	-45.3	0.0	0.6	61.1	53.4	74	54	-12.9	- 0.6	Н
					•=================================								<u>Н</u> Н
49.6	43.0	38.6	4.7	-40.0	0.0	0.8	53.9	40.9	74	54 54	-15.9	-11.8	Н
1	•												Н
	51 1	24.0	2.0	45.2	0.0	0.6	<i>5</i> 1 9	42.2	74	5 4		10.7	Н
		35.9			0.0	0.6		43.5 34.0	74	54 54	-22.2		Н
44.2	33.4	37.7	4.7	-39.6	0.0	0.8	47.8	37.0	74	54	- 26.2	-17.0	Н
41.4	30.7	38.6	4.9	-40.1	0.0	0.9	45.7	35.0	74	54	-28.3	-19.0	H
					ф	ф							H H
52.8	42.0	37.7	4.7	-39.6	0.0	0.8	56.4	45.6	74	54 54	-17.6	-8.4	H
50.0	39.3	38.6	4.9	-40.1	0.0	0.9	54.3	43.6	74	54	- 19.7	-10.4	H
Hz 17dBm		-											
62.0	52.5	34.0	3.1	-45.4	0.0	0.6	54.3	44.8	74	54	- 19.7	-9.2	V
53.0	43.5	35.9	4.2	-43.1	0.0	0.6	50.7	41.2	74	54	-23.3	-12.8	V
													v v
68.8	60.7	34.0	3.1	-45.4	0.0	0.6	61.1	53.0	74	54 54	-12.9	-1.0	Н
57.7	45.8	35.9	4.2	-43.1	0.0	0.6	55.3	43.4	74	54	-18.7	-10.6	H
													H H
				-40.2	0.0	0.7	20.2	40.0	/4		-1/./	-0./	
	54.4 52.1 46.9 69.0 60.0 54.8 49.6 59.6 47.4 44.2 41.4 62.0 52.8 56.0 52.8 53.0 48.7 48.7 48.7 45.7 52.0	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	$\begin{array}{ c c c c c c c c c c c c c c c c c c c$

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HARMONICS AND SPURIOUS EMISSIONS - 20 MHz TX BANDWIDTH

T120; S/N: 29310 @3m T87 Miteq 92434 Hi Frequency Cables 2 foot cable Gordon 177080					able		12 foot cable				HPF_4.0GHz			RB Avera	<u>« Measurements</u> W=VBW=1MHz ge Measurements
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	RBW= Avg Mar dB	1MHz; VBW=10Hz
			MCS 0 19dBm 47.0	33.7	3.6	-45.3	0.0	0.6	51.4	39.7	74	54	-22.6	-14.3	V
7.311	3.0 3.0	63.9 51.1	47.7 38.7	35.2 37.7	4.4 5.5	-43.2 -40.1	0.0 0.0	0.6 0.9	60.9 55.1	44.7 42.7	74 74	54 54	-13.1 -18.9	-9.3 -11.3	v v
4.874	3.0	61.8	57.2	33.7	3.6	-45.3	0.0	0.6	54.5	49.9	74	54	- 19.5	- 4.1	Н
7.311 2.183	3.0 3.0	61.8 52.4	48.9 41.4	35.2 37.7	4.4 5.5	-43.2 -40.1	0.0 0.0	0.6 0.9	58.8 56.4	45.9 45.4	74 74	54 54	-15.2 -17.6	-8.1 -8.6	H H
Read Analyzer Reading Avg AF Antenna Factor Peal					Avg Peak	Average	Field : d Peal	ct to 3 mete Strength @ k Field Stre	3 m		Pk Lim Peak Field Strength Limit Avg Mar Margin vs. Average Limit Pk Mar Margin vs. Peak Limit				
	CL	Cable Los	8			HPF							-		

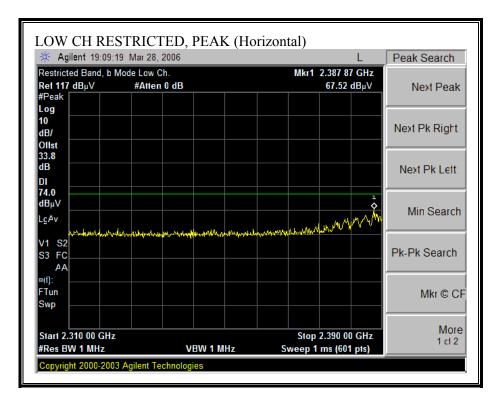
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802.11n Mode 20 MHz SISO is covered by the worst case 802.11g mode Legacy testing.

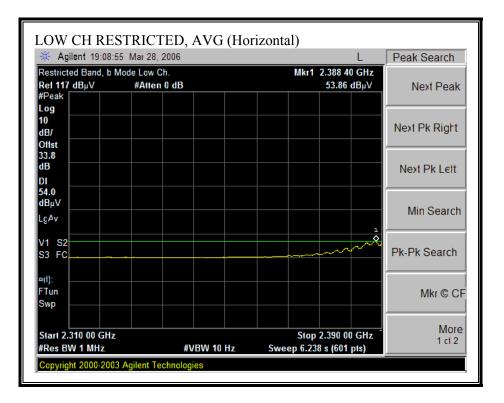
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802.11n Mode 40 MHz MIMO

RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, HORIZONTAL)

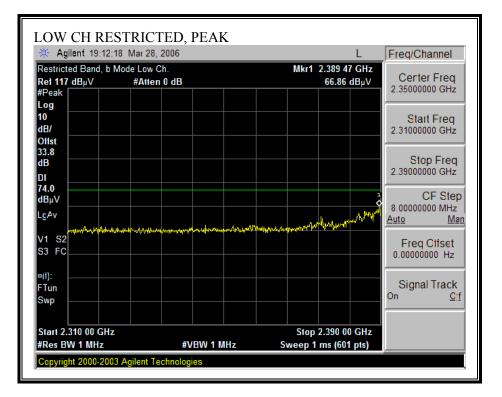


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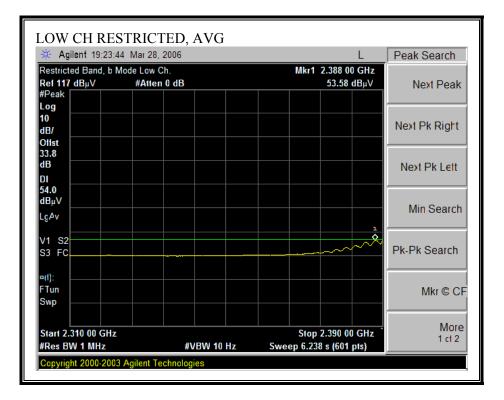


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RESTRICTED BANDEDGE (LOW CHANNEL, 2422 MHz, VERTICAL)

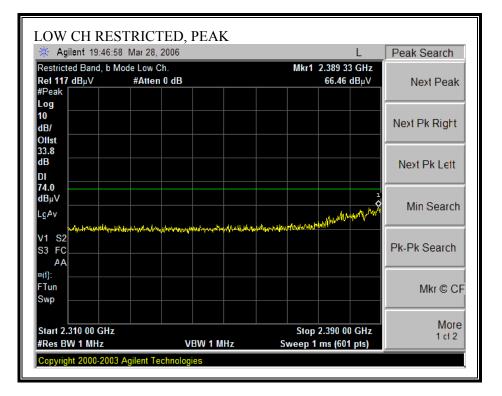


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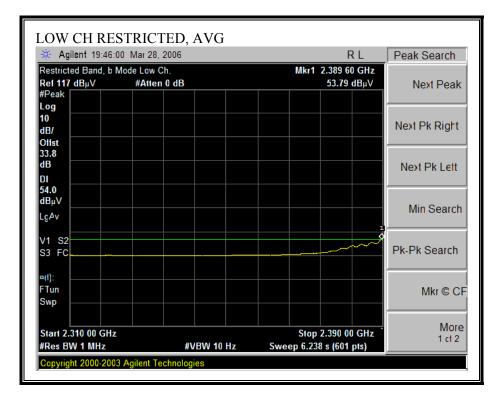


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RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, HORIZONTAL)

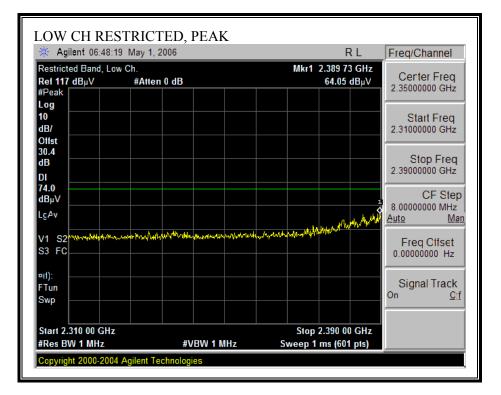


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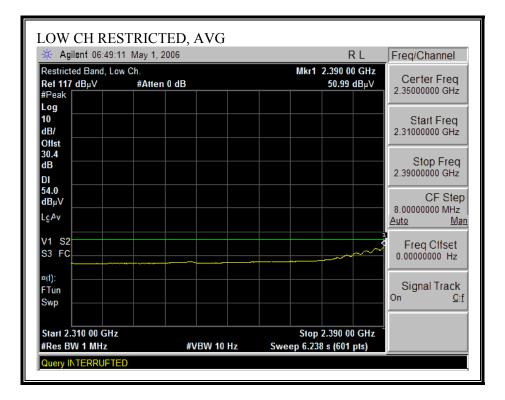


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RESTRICTED BANDEDGE (LOW CHANNEL, 2427 MHz, VERTICAL)

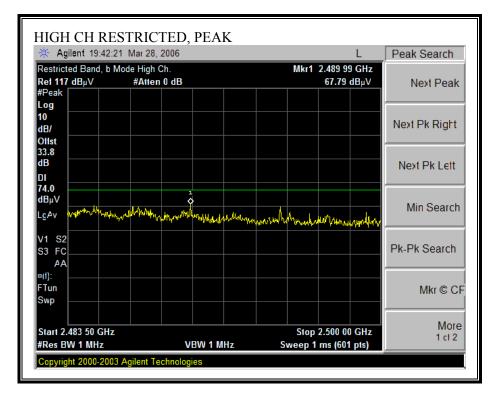


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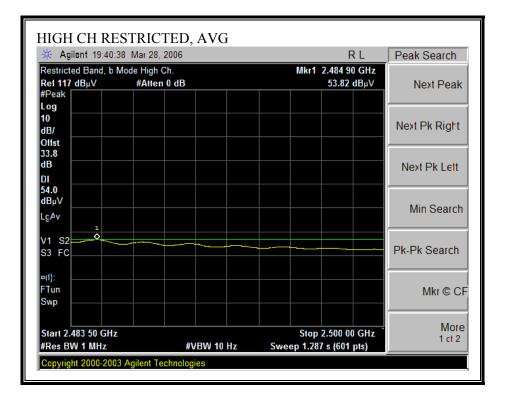


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RESTRICTED BANDEDGE (HIGHCHANNEL, 2442 MHz, HORIZONTAL)

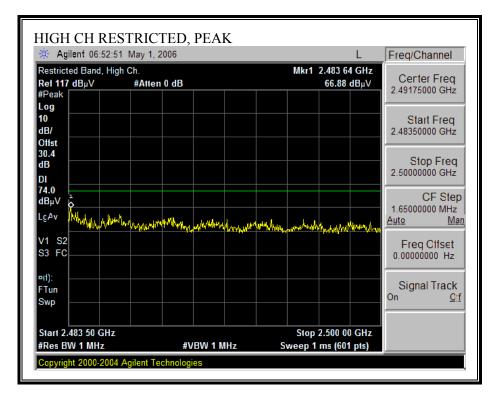


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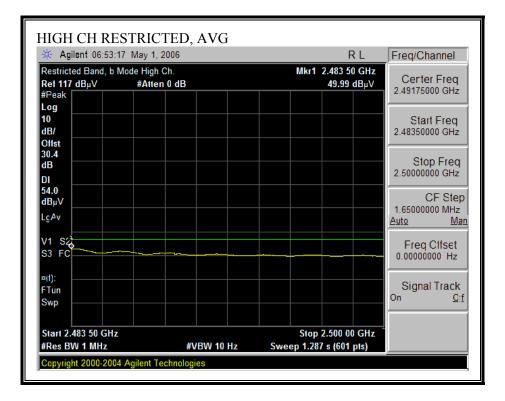


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2442 MHz, VERTICAL)

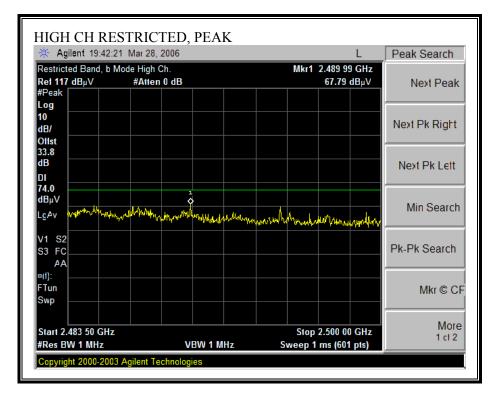


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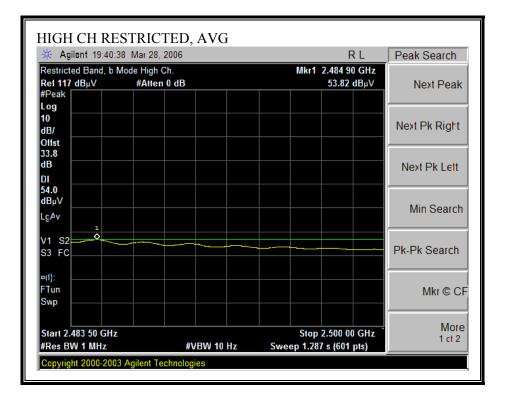


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RESTRICTED BANDEDGE (HIGHCHANNEL, 2447 MHz, HORIZONTAL)

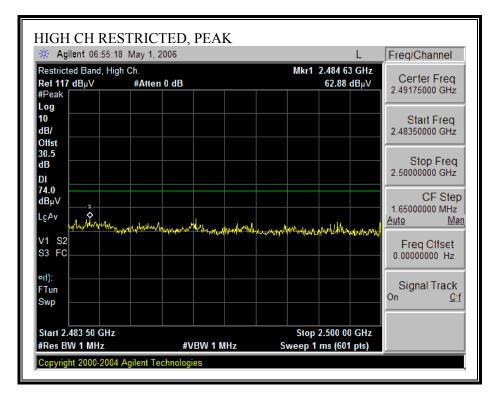


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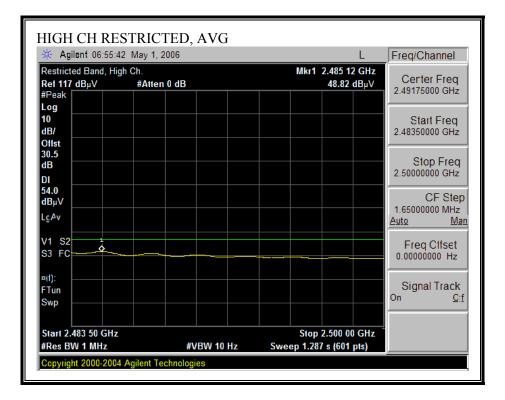


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2447 MHz, VERTICAL)

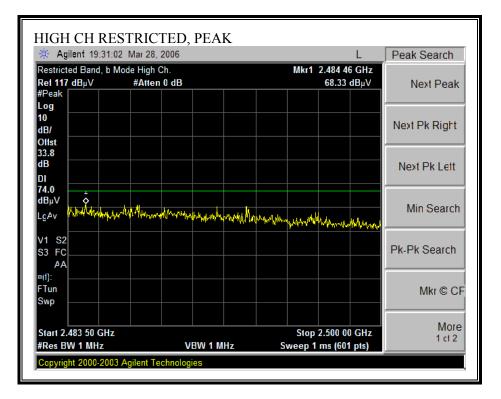


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2452 MHz, HORIZONTAL)

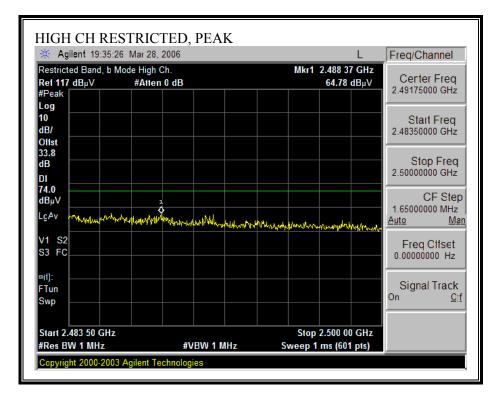


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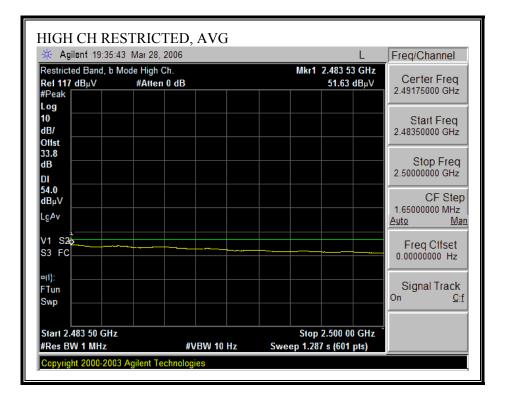


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RESTRICTED BANDEDGE (HIGH CHANNEL, 2452 MHz, VERTICAL)



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<u>11n Mode 40 MHz MIMO</u>

HARMONICS AND SPURIOUS EMISSIONS - 40 MHz TX BANDWIDTH

ompany	-		[,] Measurem Services, M		Hill Oj	pen Fiel	d Site								
:oject #: ate: 01/0		10 /08													
est Engi	ineer:	Vien Tran													
onfigura				~											
lode: 13	x 2.4 (5HZ_11n 40	MHz MIM	0											
est Equi	ipmen	. <u>t:</u>													
Но	rn 1.	18GHz	Pre-ar	nplifer	1.26	GH7	Pre-am	nlifer	26-40GH	7	н	orn > 180	2117		Limit
							i ro un	pinor	20 40 01	·			0112		ECC 15 209
1120; 5	/N: 29	310 @3m	- 187 M	iteq 924	34Z	•				-				•	FCC 13.203
Hi Freque	ency Ca	bles	1											_	
2	foot	cable	3	foot	able		12	foot c	able		HPF	Re	ject Filte		<u>k Measurements</u>
Vien	17707	9005				_	Vien 1	72000	15		F_4.0GHz			_	W=VBW=1MHz age Measurements
Vien	11101	,005	•			•	vient	72050	·"		4.00112	<u> </u>			=1MHz ; VBW=10Hz
	D' -	- -	D 14	4.00			D.C.	120			T1 T '	A T-	TH 7.5		N7
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
13,2437	1 /	·													
4.874 7.311	3.0 3.0	55.3 53.3	46.1 42.2	33.7 35.2	3.4 3.9	-45.3 -43.2	0.0 0.0	6.0 6.0	47.7 49.8	38.5 38.7	74 74	54 54	-26.3 -24.2	-15 <i>5</i> -15 <i>3</i>	v v
4.874	3.0	59.6	42.2 57.9	33.7	3.9 3.4	-43.2	0.0	0.0	49.8 52.0	50.3	74 74	54 54	-24.2 -22.0	-15.5	ч Н
7.311	3.0	57.8	43 <i>.</i> 3	35.2	3.9	-43.2	0.0	0.6	54.3	39.8	74	54	- 19. 7	-14.2	Н
16,2437															
4.874 7.311	3.0 3.0	55.6 53.0	47.4 42.8	33.7 35.2	3.4 3.9	-45.3 -43.2	0.0 0.0	0.0 0.0	48.0 49.5	39.8 39.3	74 74	54 54	-26.0 -24.5	-14.2 -14.7	v
4.874	3.0	61.5	58.7	33.7	3.4	-45.3	0.0	0.6	53.9	51.1	74	54	- 20.1	-29	H
7.311	3.0	58.2	44.5	35.2	3.9	-43.2	0.0	0.0	54.7	41.0	74	54	-19.3	-13.0	H
h 9,2452															
4.904 7.356	3.0 3.0	56.0 54.3	48.0 43.3	33.8 35.2	3.4 3.9	-45.3 -43.1	0.0 0.0	0.6 0.0	48.5 50.9	40.5 39.9	74 74	54 54	-25.5 -23.1	-13.5 -14.1	v
4.904	3.0	61.9	59.1	33.8	3.4	-45.3	0.0	0.6	54.4	51.6	74	54	-19.6	-2.4	H
7.356	3.0	59.1	44.7	35.2	3.9	-43.1	0.0	0.0	55.7	41.3	74	54	-18.3	-12.7	H
			No other emis	sions we	re dete	ted above	system no	ise floor	÷						
f	£	Measureme	ent Frequency	у		Amp	Preamp	Gain				Avg Lim	Average I	Field Streng	th Limit
]	Dist	Distance to							ct to 3 met					d Strength I	
_	Read AF	Analyzer R Antenna Fa	-			Avg	-		Strength @			-	-	Average I	
		Cable Loss				Peak HPF	High Pas		c Field Stre	ngtn		PK Mar	Margin Vs	. Peak Limi	t
	CL														

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7.5.5. TRANSMITTER ABOVE 1 GHz FOR 5725 TO 5850 MHz BAND

<u>11n 20 MHz CDD MCS 0</u>

HARMONICS AND SPURIOUS EMISSIONS - 20 MHz TX BANDWIDTH

	. ransing	1 5.00Hz_1	11n20MHz (CDD M	Cau										
•	uipmen	_	Dra-al	mplifer	4.260		Dra an	lifer	26-40GH		L	orn > 180	<u></u>		Limit
		-18GHz 310 @3m					Pre-am	piner	20-4001		1.		582		FCC 15.209
		310 @3m	T 1143 P	Agilent 3	008A01	126 -				-				*	FCC 13.205
	quency Cal 2 foot		3	3 foot c	able		12	foot c	cable		HPF	Re	eject Filte	er i	<u>k Measurements</u> W=VBW=1MHz
Vier	n 177079	9005	-			•	Vien 19	9720900	05 🗸	HP	PF_7.6GHz	-		• Avera	sW=VBW=1MHz age <u>Measurements</u> =1MHz ; VBW=10Hz
f	Dist	Pead Pk	Read Avg.	AF	CL	Amp	D Corr	Fltr	Peak	Avg	Pk Lim	AvgLim	PL Mar	Avg Mar	Notes
ı GHz	(m)	dBuV	dBuV	dB/m		dB	dB	dB	1	Avg dBuV/m	1		1	dB	(V/H)
ow Ch							1								<u> </u>
1.490 7.235	3.0 3.0	51.3 44.4	39.6 30.6	37.6 40.2	5.0 6.0	-33.1 -32.0	0.0 0.0	0.7 0.6	61.5 59.3	49.8 45.4	74 74	54 54	-12.5 -14.7	-4.2 -8.6	v
7.235	3.0 3.0	44.A 53.5	30.6	40.2	6.U 5.D	-32.0	0.0 0.0	0.0	59 <i>3</i> 63.7	45.4 53.0	74	54 54	-14.7 -10.3	-8.0 -1.0	N H
7.235	3.0	43.1	30.8	40.2	6.0	-32.0	0.0 0.0	0.0	57.9	45.6	74	54 54	-16.1	-1,0 -8,4	H H
					ļ									-	
/lid Ch. 1 <i>.</i> 570	3.0	53.6	41.3	37.6	5.0	-33.0	0.0	0.7	63.9	51.7	74	54	-10.1	-2.3	v
7.355	3.0	43.7	41.5 31.8	40.3	5.0 6.0	-33.0	0.0	0./	58.6	46.7	74	54 54	-15.4	-23	v
1.570	3.0	57.3	43.5	37.6	5.0	-33.0	0.0	0.7	67.7	53.9	74	54	-6.3	- 0.1	H
7.355	3.0	44.5	32.9	40.3	6.0	-32.0	0.0	0.6	59.4	47.8	74	54	-14.6	-6.2	v
ligh Ch				. <u> </u> /	J				-				+	++	V
ligh Ch 1.650	3.0	55.A	43.3	37.7	5.1	-32.9	0.0	0.7	65.9	53.8	74	54	-8.1	-0.2	Н
7.475	3.0	43.7	31.3	40.5	6.0	-32.0	0.0	0.6	58.7	46.3	74	54 54	-15.3	-0.2	H
1.650	3.0	51.6	39.5	37.7	5.1	-32.9	0.0	0.7	62.1	50.0	74	54	-11.9	-4.0	v
7.475	3.0	42.8	30.3	40.5	6.0	-32.0	0.0	0.0	57.9	45.4	74	54	-16.1	-8.6	v
lo other s	spurious	were detected	d above 2nd har	monoic.	ļ)				-				-	+	1
	f Measurement Frequency Amp Preamp Gain Dist Distance to Antenna D Corr Distance Correct to 3 mete Read Analyzer Reading Avg Average Field Strength @ AF Antenna Factor Peak Calculated Peak Field Stre CL Cable Loss HPF High Pass Filter						3 m					.imit .imit			

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<u>11n 40 MHz CDD MCS 32</u>

HARMONICS AND SPURIOUS EMISSIONS - 40 MHz TX BANDWIDTH

est Eq	uipmen	<u>t:</u>												1	
		18GHz		mplifer			Pre-am	plifer	26-40GH	z	Н	orn > 18(GHz		Limit
		310 @3m	T145	Agilent 3	008A0	05(•				•	FCC 15.209
	quency Cal 2 foot		:	3 foot c	able		12	foot c	able		HPF	Re	ject Filte		<u>k Measurements</u> W=VBW=1MHz
Vie	n 177079	0005	•			•	Vien 19	72090	•		F_7.6GHz	•		Avera	n <u>ge Measurements</u> 1MHz ; VBW=10Hz
f	Dist		Read Avg		$\mathbf{C}\mathbf{L}$	Amp	D Corr	Fltr	Peak	Avg	Pk Lim			Avg Mar	
GHz . 151	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H)
510	3.0	54.2	39.5	37.6	5.0	-33.1	0.0	0.7	64.5	49.8	74	54	-9.5	-4.2	v
265	3.0	44.1	30.5	40.3	6.0 6.0	-32.0	0.0	0.0	59.0	45,4	74	54	-15.0	-8.6	v
510 265	3.0 3.0	55.1 44.7	41.8 31.3	37.6 40.3	5.0 6.0	-33.1 -32.0	0.0 0.0	0.7 0.6	65.4 59.5	52.0 46.1	74 74	54 54	-8.6 -14.5	-2.0 -7.9	H H
											· •				
.159		53.4		27.6	<i>6</i> 1	00.0	0.0	0.7	(2.0	40.4			11.0		37
590 385	3.0 3.0	52.4 42.7	39.0 30.5	37.6 40.4	5.1 6.0	-33.0 -32.0	0.0 0.0	0.7 0.6	62.8 57.7	49.4 45.5	74 74	54 54	-11.2 -16.3	-4.6 -8.5	v
590	3.0	57.8	43.3	37.6	5.1	-32.0	0.0	0.7	68.2	43 <u>5</u> 53.7	74	54 54	-105	-0.3	H
385	3.0	43.4	31.2 ere detected ab	40.4	6.0	-32.0	0.0	0.0	58 <i>.</i> 4	46.2	74	54	-15.6	-7.8	Н
	f Dist Read AF CL	Measureme Distance to Analyzer R Antenna Fa Cable Loss	eading actor	y		Amp D Corr Avg Peak HPF	Average	Corre Field : ed Peal	ct to 3 mete Strength @ c Field Stre	3 m		Pk Lim Avg Mar	Peak Fiel Margin vs	Field Strengt d Strength L . Average L . Peak Limit	imit imit

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WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

2.4 GHz BAND

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZ	ZONTAL	E				1	Morgan H: Fel: (408	terey Road ill, CA 95037 8) 463-0888 8) 463-0885				
Data# Audix		le#: 06	U10708.	EMI	Date:	01-03-3	2007 Ti	me: 13:41:11				
Test Compa Proje Confi Mode	Condition: FCC CLASS-B HORIZONTAL Test Operator: : William Zhuang Company: : Broadcom Project #: : 06U10708 Configuration: : BUT/ Laptop Mode of Operation:: TX 2.4GHz band, Worst Case Target: : FCC Class B											
	_	Read				Over		Page: 1				
	Freq	Leve1	Factor	revel	Line	Limit	Remark					
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB						
1	31.940 104.690											
3	148.340											
4	172.590											
5	205.570											
6	218.180											
7	247.280											
9	407.330 761.380											
10	904.940				46.00							

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SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

Data#: 8 File#: 06Ul0708.EMI Date: 01-03-2007 Time: 13:48:44 Audix ATC Condition: FCC CLASS-B VERTICAL Test Operator: : William Zhuang Company: : : Broadcom Project #: : 06Ul0708 Configuration: : EUT/ Laptop Mode of Operation:: TX 2.4GHz band, Worst Case Target: : : FCC Class B Page: 1 Page: 1 Mode of Operation:: TX 2.4GHz band, Worst Case Target: : : FCC Class B Page: 1 Page: 1 Mint Over Imit Over Mage: 1 Node of Operation:: TX 2.4GHz band, Worst Case Target: : : FCC Class B Page: 1 Mint Over Imit Over Mint Over Mint Over Imit Imit Premark 1 128.940 1 1 1 Open: Imit Over Imit Over Imit Over Imit Over
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5 GHz BAND

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

·	ASINDANNE GOTMOD, IN GUNGDI MERRICE LIGBA, TOM	C-,				M T	lorgan 'el: (Hill, 408) 4	ey Road CA 95037 163-0888
		1 - 11 - 1							163-0885
Data#: Audix		1e#: 06	5010708	.EMI	Date:	01-03-2	2007	Time:	14:29:54
Test C Compan Projec Config	st #: guration: of Operati	: Wi : B1 : 06 : EU on:: T2	lliam 2 coadcom 5010708 JT/ Lapt	Zhuang top z band,	Worst (Case			
						-			Page: 1
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remar	k	
-	MHz	dBuV	db	dBuV/m	dBuV/m	db		_	
1	172.590	24.10	13.31	37.41	43.50	-6.09	Peak		
2	204.600	24.79	13.91	38.70	43.50	-4.80	Peak		
3	344.280	22.94	16.79	39.73	46.00	-6.27	Peak		
4	408.300	24.99	18.25	43.24	46.00	-2.76	Peak		
5	488.810	21.03	20.03	41.05	46.00	-4.95	Peak		
6	523.730	19.35	20.62	39.97	46.00	-6.03	Peak		
7	906.880	19.14	26.01	45.15	46.00	-0.85	Peak		

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SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERT	ICAL							
	COMPLIAN(Engineering Solvice In PCC. UCCLCIS PRICE ULCSA, TOM)E				N C	Cel: (408)	erey Road 1, CA 95037 463-0888 463-0885
Data# Audix		le#: 06U:	10708.	. EMI	Date:	01-03-2	2007 Time	e: 14:39:41
Test Compa Proje Confi	ect #: .guration: of Operati	: Wil] : Broa : 06U] : EUT,	liam 2 adcom 10708 / Lapt 5.8GH2	Zhuang Cop z band,	Worst (Case		
		Read			Limit	0ver		Page: 1
	Freq		actor	Level			Remark	
	MHz	dBuV	dB	dBuV/m	$\overline{dBuV/m}$	dB		
1	104.690	26.47	12.38	38.85	43.50	-4.65	Peak	
2	128.940	18.29	15.15	33.44	43.50	-10.06	Peak	
3	206.540	19.60	13.61	33.21	43.50	-10.29	Peak	
4	290.930	16.98	15.33	32.31	46.00	-13.69	Peak	
5		16.60						
6		18.66						
7		17.46						
8	903.000	14.11 2	25.95	40.06	46.00	-5.94	Peak	

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7.6. POWERLINE CONDUCTED EMISSIONS

LIMIT

\$15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted I	Limit (dBuV)
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 "
0.5-5	56	46
5-30	60	50

Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

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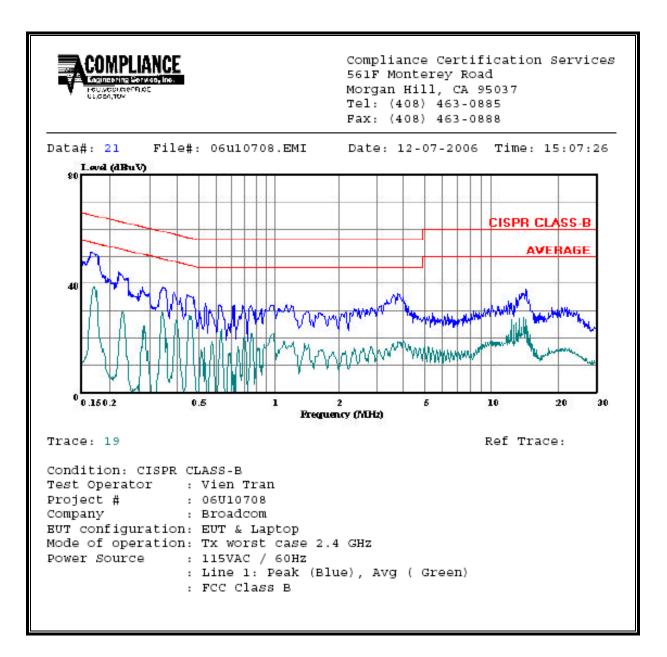
2.4 GH z BAND

6 WORST EMISSIONS

	CONDUCTED EMISSIONS DATA (115VAC 60Hz)												
Freq.		Reading		Closs	Limit	FCC_B	Marg	(in	Remark				
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV(dB)	L1/L2				
0.17	51.37		38.56	0.00	65.16	55.16	-13.79	-16.60	L1				
0.24	43.92		29.86	0.00	62.17	52.17	-18.25	-22.31	L1				
3.95	36.12		24.00	0.00	56.00	46.00	-19.88	-22.00	L1				
0.18	52.27		40.72	0.00	64.49	54.49	-12.22	-13.77	L2				
0.24	43.92		35.37	0.00	62.17	52.17	-18.25	-16.80	L2				
4.10	36.12		26.99	0.00	56.00	46.00	-19.88	-19.01	L2				
6 Worst I	Data												

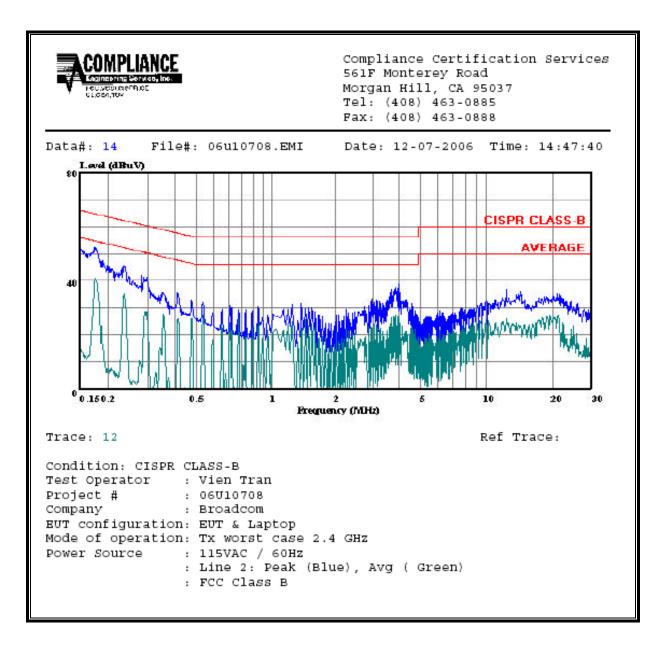
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LINE 1 RESULTS



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LINE 2 RESULTS



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T.

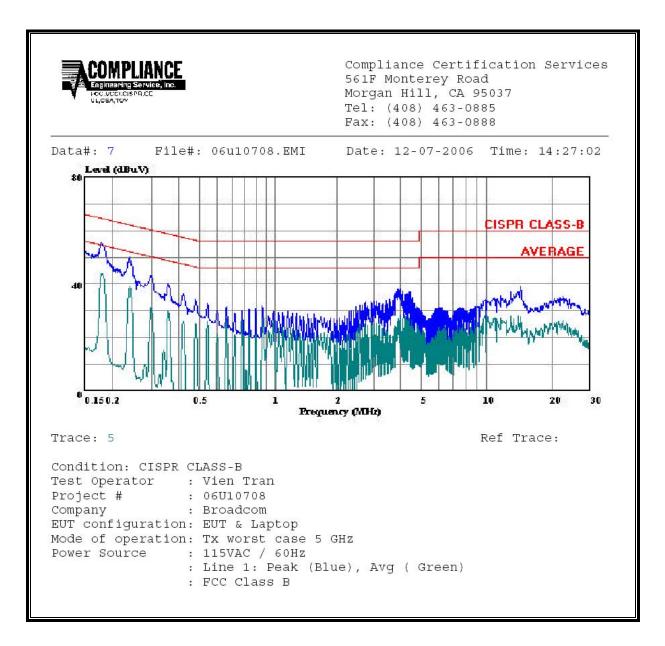
5 GHz BAND

6 WORST EMISSIONS

	CONDUCTED EMISSIONS DATA (115VAC 60Hz)													
Freq.		Reading		Closs	Limit	FCC_B	Marg	;in	Remark					
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV(dB)	L1/L2					
0.18	55.32		44.00	0.00	64.49	54.49	-9.17	-10.49	L1					
0.24	50.36		38.98	0.00	62.10	52.10	-11.74	-13.12	L1					
4.05	37.97		28.50	0.00	56.00	46.00	-18.03	-17.50	L1					
0.18	51.51		39.12	0.00	64.49	54.49	-12.98	-15.37	L2					
0.24	42.85		20.62	0.00	62.10	52.10	-19.25	-31.48	L2					
4.05	35.63		18.90	0.00	56.00	46.00	-20.37	-27.10	L2					
6 Worst I	 Data 													

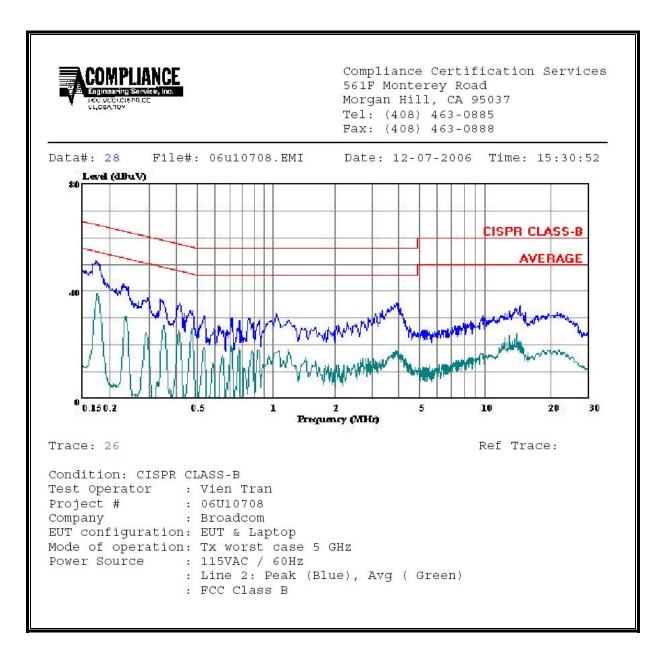
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LINE 1 RESULTS



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LINE 2 RESULTS



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